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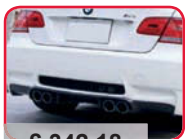
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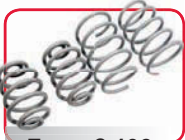
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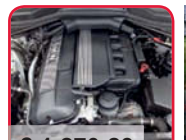
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E39 E60 Engine 520i M54 Km 164.000 #C17274



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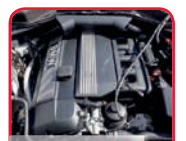
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BMW E36 M3 cabriolet 1996
Car no.: 1768

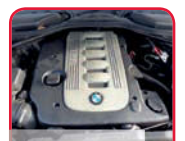


BMW E46 318D touring 2003
Car no.: 1765



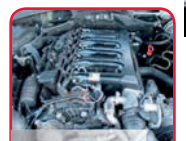
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E39 E60 Engine 520i M54 Km 171.000 #C16275



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E60 E61 Engine 535D Km. 153.000. #C13609



£ 2,308.33

E60 E61 E63 E64 Engine 535D Km. 242.000 #C18804



BMW E92 LCI 335i coupé 2008
Car no.: 1754



BMW X5 (E53) SAV 3.0D 2004
Car no.: 1752



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JAPE TIITINEN

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EDITOR: Elizabeth de Latour
pbmw@unity-media.com
AD MANAGER: Claire Hodder
chodder@unity-media.com

FIRST WORDS

Sometimes you need something comforting and familiar in your life, be it personal or automotive. I'd like to think that this month's cover car is exactly that. There's no mad camber, no stretched tyres, not really much in the way of styling additions even. It's a white E28, seriously '80s in itself, on period Schnitzer splits and it's not even had an engine swap. Yes, there is a turbo, but M30s and turbos make for happy bedfellows. I'd like to think of this E28 as the automotive equivalent of Friday night fish and chips, a Saturday morning fry-up or a Sunday roast. It just makes you feel good and, with 886hp (the car, not the roast), it's a pretty hearty portion of wholesome goodness.

Elsewhere, show season has now gone mental and we've got reports flying at us from across the globe. It's always fun to see how different countries do things – the answer generally being 'very differently' – but we also share a lot of similarities; this means shows (and our subsequent show reports) can be a great source of inspiration and ideas. One car that's definitely becoming a lot more prolific on the BMW scene is the new M3 and M4 (yes, technically two cars) and people are really starting to get their teeth into them on both the styling and performance fronts. To that end we've got a rather sexy Austin yellow M3

lurking in this issue, assembled by Autocouture Motoring, and an M4 has even joined the *Our Cars* fleet. Of course, no one that works here could possibly afford one and this example belongs to Thorney Motorsport – the company has plenty of plans for their car so it's going to be interesting to see what the results are.

I've also kind of fallen in love with the red E24 6 Series that you may have spotted perched on the top of our cover this month. I love the classic Six anyway, I'm pretty sure everyone does, but this bagged example looks

so good and, as someone who's trying to take control of their wheel addiction, it really caught my eye. Not only has the owner stuck a set of 18s on there, most definitely not a common site on an E24, he's built them up from a set of Chrysler 16s of all things. Good effort, I say. There's plenty more to get your teeth into this month, so go on away with you, have a rummage through the pages and enjoy our August issue.

Elizabeth de Latour, Editor



SUB EDITORS: Christian Shelton, Rachael Willson

SENIOR DESIGNER: Aaron Batson

DESIGNERS: Dave Powney, Alex Sowa

PRODUCTION MANAGER: Jo Claydon-Smith

PRODUCTION ASSISTANT: Karen White

REPRO CONTROLLER: Tom Jackson

SENIOR RETOUCHER: Laurence Green

FINANCE DIRECTOR: Helen Lawson

CONTRIBUTORS: Louis Ruff, Steve Hall, Si Gray, Chris Umali, Daniel Bevis, Matt Petrie, Patrik Karlsson, Bastien Bochmann, Scott Paterson, Kevin Raekelboom, Tony Saggi, Anthony Seed, Peter Wu, Zamanur Quadir, Divyesh Dajee, John Thorne, Gerry Speechley, Sam Ratcliffe, Paul Cowland, Ben Koflach, Steven Alderson

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Performance BMW, Unity Media plc,
Becket House, Vestry Road, Sevenoaks,
Kent, TN14 5EJ, England
Tel: 01732 748000 Fax: 01732 748001

Email: pbmw@unity-media.com

Web: www.performancebmwmag.com

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This BMW-loving father and son duo have built themselves two very different 2002s: one S14-powered, one turbocharged, both rather brilliant.

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Car shows don't come much bigger than Bimmerfest and this year's offering from this Stateside behemoth didn't disappoint.

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Every year, come show season, there are cars making their debut that everyone already knows about! Some have even been talked about for months

beforehand! Be it on forums or by word of mouth, many builds are well documented before being unveiled. Sometimes, however, something incredible just surfaces from the realms of the unknown and blows us all away, such as this E30 belonging to Guy Higgs. It appeared from nowhere this year and absolutely astounded us all.

Here at *PBMW* we're sometimes accused of being quite fussy about builds (we want to bring you the cream of the crop, after all) however, we have to say when it

comes to this build there's nothing we would change; it's perfection in our eyes. So, without further ado, let's meet Mr Elusive, Guy Higgs, and see just how this E30 came to be...

"I used to work for a company that built and tuned race cars," says the 33-year-old Gloucestershire local. "The company bought this car from a good friend of mine who had it as his daily driver in the form of a 320i auto. It was soon stripped and fitted with a T45 TIG welded cage and we intended to use it in the Production BMW Championship but it never made it there; instead it just sat there in the corner of the workshop for a few years. When I left the company I made a deal with the guys so I could keep the shell.

"The shell sat untouched at my home for a year or so until I said to my friend that I'd get it ready for his stag do, which was happening at the Retro Car Show at Santa Pod. Unfortunately we said that just before Christmas 2013 and the show was in June/July time 2014 so it was full steam ahead to get it done in time!

"I was fortunate enough to have done a couple of years of racing at Castle Combe in an E36 M3 which was very successful. That was a shell upwards build, so after that I knew I wanted to build an E30 race car. I've always had E30s in one form or another and I currently use a 318iS as a daily. This car was never going to be anything other than a racer."

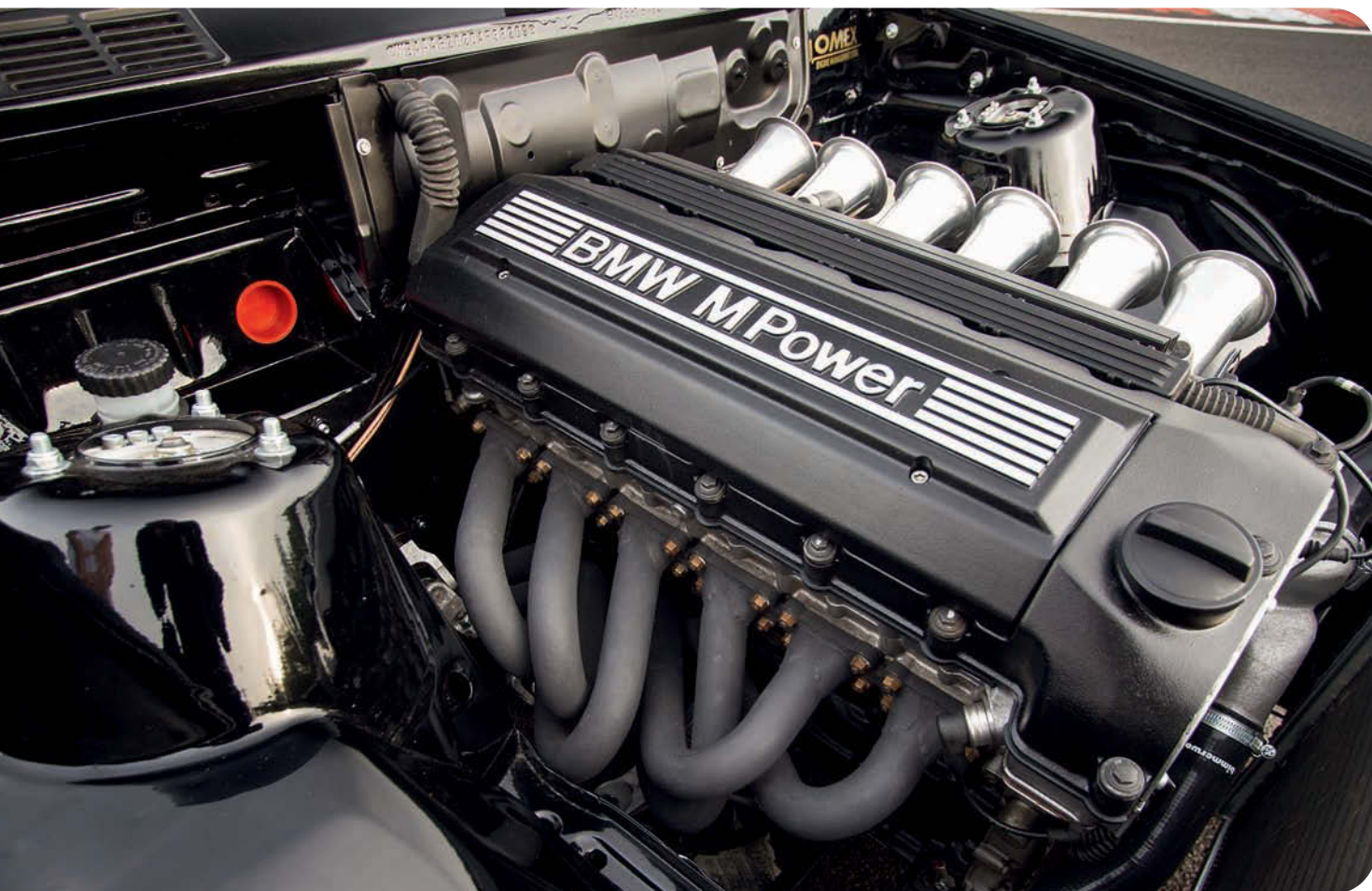


FROM THE DEPTHS

Guy Higgs' E30 couldn't even have been described as a car 12 months ago. Now it stands as one of the most astonishing second-gen 3 Series builds to surface for a long time.

Words: Ben Koflach Photos: Louis Ruff @ Definitive Media





Working day-to-day as an ECU guru down at Omex, Guy's skill set obviously covers the wiring and electronics side of any build, but his skills also range far wider, with an incredible amount of engineering and design work having gone into the build.

Guy decided he wanted to use E36 M3 Evo power but before that the shell needed a fresh lick of paint. So he set about tidying up the engine bay, removing every bracket and hole that wasn't be required. The build may have been done to a tight deadline but there was no way that this was to be a rush job. "I couldn't decide whether to paint it black or silver!" Guy tells us. "Due to the limited time scale I decided to paint it black. The paint was a joint effort; myself and my cousin 'Little Luke' prepped the car in the workshop at home and then dragged it down to Ultimate Paint & Chip Repairs where my good friend Luke Black painted it – that was a frantic two days over Easter 2014.

"I decided to use the S50B32 as I had experience with them but I didn't want to follow the current trend of using the E34 5 Series sump and so on. I fitted the engine in

the upright position, the same as the M20, so I could keep a lot of the E30 components like the engine mounts, gearbox and prop. The best part of the decision was that I could use an old exhaust manifold I had! This conversion usually becomes difficult due to the standard S50 exhaust not fitting, so I was really happy to discover that my old manifold had the same length and diameter runners as a standard S50 item. So I bought an S50 flange and fitted it to the E30 manifolds with fillets, before Luke Black (once again) from Forge Motorsport finished it with lovely TIG weld.

"With the engine in this position I was always going to have to adapt the sump, so I chose to keep the S50B32 twin oil pick-up sump but this obviously fouled everywhere! To get around this I fitted an E36 anti-roll bar which faces forward to clear the sump and made a complicated cardboard bowl for it which, again, Luke TIG welded for me. Luke and the guys at Forge Motorsport were a huge help with the welding and their sister company, Hose Technik, supplied custom braided brake lines and hoses throughout. I

also built a custom VANOS removal kit. I've done a few of these in the past due to engines running cams that required the VANOS to be removed. It's quite straightforward and allows the cams to be dialled in to my specifications. As I work for Omex Technology it was no contest as to which ECU I was going to use!"

With the engine ready to fit, Guy just needed to work out a few more details. For the intake he's fitted some glorious Jenvey 48mm trumpets (as you can imagine, the noise is just incredible), while the engine was bolted to an E30 325i Sport gearbox with a Skeleton flywheel and JBR clutch sandwiched in the middle. He's also gone as far as to use a non-M3 E36 radiator which has a built in expansion tank, thus meaning there was no external header tank to clutter the bay. Out back a 3.64 LSD has been fitted. With a custom engine wiring loom and plenty of tweaking, the powertrain was ready to go, meaning Guy could work on getting that engine bay finished off. To make space for the engine a Renault 5 GT Turbo brake servo has been



DATA FILE

ENGINE & TRANSMISSION: 3.2-litre straight-six S50B32, custom Vanos delete, Jenvey 120x48mm air horns, equal length stainless steel exhaust manifolds, Omex 710 Series standalone engine management, custom wiring loom, Setrab oil cooler with Hose Technik oil lines, modified S50B32 sump with twin oil pickups, E36 radiator, M20 engine mounts, JBR 140mm twin-plate clutch with Skeleton flywheel, E30 325i Sport Getrag gearbox, quick-shift, 3.64 final drive LSD

CHASSIS: 8x16" (front and rear) Ford Escort Cosworth Monte Carlo OZ wheels converted to 4x100 PCD with 215/40 (front and rear) Toyo tyres, Gaz coilovers, Gaz adjustable topmounts, E36 front anti-roll bar, E36 steering rack, standard brakes with custom Hose Technik braided lines, Renault 5 GT Turbo brake servo

EXTERIOR: Side repeaters removed, Aero bonnet catches

INTERIOR: Fully stripped-out, TIG-welded Custom Cages roll-cage, Sparco Circuit Pro carbon fibre driver's seat, Sparco Circuit fibreglass passenger seat, Sparco steering wheel, TRS six-point driver's harness, Sabell four-point passenger harness, AEM wideband gauge, all sound deadening removed, heater box removed, sunroof skin and runners removed, reduced 1987 model wiring loom with fusebox relocation to underneath dashboard

THANKS: Scott Compton, Luke Black, Little Luke, Omex, Forge Motorsport and Hose Technik and all my friends and family who helped. Castle Combe for the use of the track for the static shoot – action photos captured at Shelsey Walsh Hillclimb



“This car was never going to be anything other than a racer”



used and Guy's custom wiring skills took care of moving the fusebox to underneath the dashboard. The rest of the bay has been emptied of absolutely anything unnecessary, leaving a clean and functional appearance to die for.

The chassis setup centres around Gaz components; the renowned UK firm's coilovers can be found front and rear, topped with adjustable top mounts for good measure. The aforementioned E36 anti-roll bar has been used up front with a quicker E36 steering rack under there, too. Under each corner you'll find a rather unusual wheel setup but one that doesn't half work. "I bought the OZ Racing wheels off a friend of mine about 15 years ago," Guy explained. "They're from an Escort Cosworth Monte Carlo and I had a local old boy engineer convert them from 108 to 100 PCD. They've been on a few E30s in the past but will be staying on this one!"

Shod in 215/40 Toyo tyres, they not only look the part but function well, too. "I'd like to build my own suspension arms and crossmembers, front and rear, with the aim of better handling and when the chassis is outperforming the engine I will have no choice but to increase power," Guy winked. "Whether it's a full race engine or turbocharger, it will need to happen,

although I don't want to lose that great engine sound!"

Guy then set about the interior, as he explains: "The chassis harness was taken from an early 1987 E30 which was very minimal with no electric windows. I reduced it to only what I required and re-taped it. This was connected to the engine harness which I had built at work during a few lunch hours."

The next step was to get everything refitted in the ready-caged insides, with a pair of Sparco pews, harnesses and not a lot else going in. Even the heater box has been left out to save weight and there's certainly no hint of a radio or any sound deadening. Guy wasn't joking when he said it was to be a pure racer!

"The most difficult part of the build was timescale," Guy told us. "My neighbour Scott Compton was a huge help. He helped me every available hour from day one right up to the night before the stag do. We had many laughs and arguments! When I needed parts made he wouldn't hesitate, like when I was doing the VANOS kit – he brought me machined parts on a next day turnaround.

"Scott and I worked every possible evening to get it ready for the deadline. We more or less took the shell back to the metal inside and underneath and built it up from

there in not a lot of time. I don't really have a favourite part of the car, it looks just the way I wanted it to – namely stock apart from the wheels and cage. The wheels do stand out and I'm pleased that I had the decals made. This was another last minute idea which Vivid Vinyl helped me out with. The sound of the air horns really is impressive, I guess that's one of my favourite parts!

"The power and handling are actually quite well balanced but even now I haven't yet mapped the ECU properly or set any of the geometry. This will be done over winter. This year it's been running on a temporary map that I had on a friend's E36 with a similar setup which I just tweaked a bit out on the road. I used to see about 330hp with his but this engine is a complete unknown so it could be anything! At the moment the car is still using standard brakes, too. Believe it or not they coped with Combe reasonably well but will soon be converted to bigger items."

There's certainly one thing for sure – this E30 may have seemed to appear out of nowhere but it won't be forgotten for a long time. Guy's taste for perfectly executed simplicity has seen his E30 transformed into the ultimate track machine, which is just as at home on the show circuit as it is on the race circuit ●



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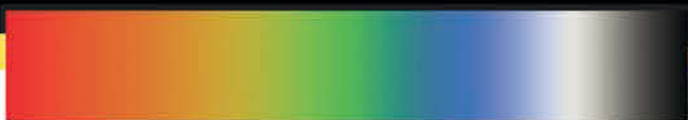
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A lot of time and effort was spent fine-tuning the system to ensure that it delivers the perfect V8 soundtrack, completely free of drone when cruising but suitably vicious at full throttle and high revs. As for power gains, the full system delivers an additional 18-20hp and 18lb ft of torque, while a custom remap will add another 10hp and 11lb ft, while the manifolds add 10hp and 7lb ft of torque with no change in sound or noise level.

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If you've bought an F80 M3 or F82 M4 and are already itching to modify it, Bilstein's latest suspension offering is bound to be of interest. The B16 Damptronic kit offers a significant handling upgrade over the standard suspension, and the kit is also available without electronic integration, then using the PSS10 ten-click adjustment system. The B16 Damptronic kit has been designed to offer the perfect balance between comfortable day-to-day ride and sharp and firm fast road handling when the mood and occasion arises. With precision-machined threaded steel bodies, the dampers offer 20mm of ride height adjustment from a lower starting point, delivering a drop of between 20-40mm, as low as Bilstein reckons you can go without spoiling your M car's handling. When you switch EDC settings, the bump and rebound are altered together in a carefully pre-selected ratio for optimum handling and control. The kit has undergone extensive fine-tuning at the Papenburg test facility and comes with a 12 month warranty.

Price: From £1982.40

Web: www.bilstein.com

Tel: 0116 2478930





AUTOGLYM SUPER FOAMING SHAMPOO

With summer here, the need to keep your pride and joy gleaming will be a priority and Autoglym's latest shampoo is a great addition to your arsenal in the fight against grime. The shampoo has a rich, foaming, pH neutral formulation that allows it to quickly break down dirt and contaminants from paintwork without stripping existing wax layers and has a rich, fruity fragrance.

Price: 500ml £5.99, 1l £7.99

Web: www.autoglym.com



SANTA POD BMW SHOW – 27/09

This year marks the tenth anniversary of the BMW Show at Santa Pod, so there's even more reason to attend this massive event. Thorney Motorsport will be supplying over £10,000 worth of prizes for the winners of the various run what ya brung and track handling classes, with prizes including Bilstein suspension and a Powerflow Exhaust up for grabs. You can also hit the quarter-mile, with just £25 buying you unlimited runs all day long, with 12 different classes to help level the playing field. The show 'n' shine paddock will be home to some of the cleanest, shiniest and sexiest BMWs around on the day, with trophies up for grabs for the winners, there will be the trade village to look around as well as a mobile dyno and numerous club displays too. It promises to be an awesome day and if you book tickets before 18 September you can get in from as little as £12 plus booking fees.

Web: www.bmwshow.co.uk

Tel: 01234 782828



EIBACH E90 SPRINGS

New from the German suspension expert this month come uprated, shot-peened, powdercoated progressive springs for the E90 3 Series which will lower your car and sharpen up the handling. For those looking for a subtle drop, the Pro-Kit delivers 30mm of lowering at the front and 25mm at the rear but if you're after something a bit more serious, the Sportline Kit will give you drop of 45-50mm up front and 35mm at the rear.

Price: Pro-Kit £177, Sportline Kit £171.99

Web: www.eibach.com

Tel: 01455 285851



E39 M5 AMD TUNING PACKAGE

It's nice to see that the E39 M5 hasn't been forgotten by the various BMW tuning companies and AmD is one of those still looking after the iconic M saloon. This tuning package comprises a performance exhaust and software remap for more noise and go. The exhaust in question is a Milltek stainless steel system, with 2.5" diameter mandrel bent piping for optimum flow and throttle response as well as offering a thunderous soundtrack, but without the drone. The AmD software makes full use of the free-flowing exhaust to offer performance gains that you wouldn't be able to enjoy with just one modification of the other alone. AmD offers free fitting on Milltek systems or a 10% discount and free delivery if you'd rather fit it yourself. If you buy the exhaust and remap together, the remap is half price.

Web: www.amdtuning.com

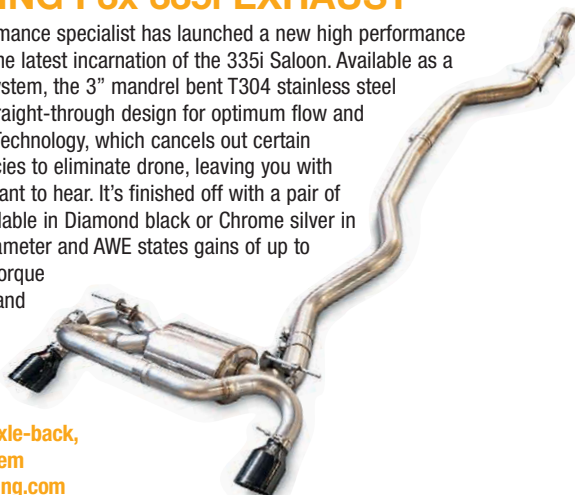
Tel: 01708 861827

AWE TUNING F3x 335i EXHAUST

The American performance specialist has launched a new high performance exhaust system for the latest incarnation of the 335i Saloon. Available as a rear section or full system, the 3" mandrel bent T304 stainless steel system features a straight-through design for optimum flow and features AWE's 180 Technology, which cancels out certain problematic frequencies to eliminate drone, leaving you with just the sound you want to hear. It's finished off with a pair of dual-walled tips available in Diamond black or Chrome silver in 90mm or 102mm diameter and AWE states gains of up to 15hp and 32lb ft of torque with the full system and AWE guarantees a perfect fit as well as a lifetime exhaust warranty.

Price: From \$1395 axle-back, from \$1745 full system

Web: www.awe-tuning.com



SONAX XTREME CLEANING RANGE

Show season is well and truly here and if you want to keep your car looking its best you need a serious cleaning arsenal, and the latest range from Sonax is definitely worth a look. The range is made up of a large number of products, with everything you need to keep your car looking its best both inside and out. Highlights include Red Summer concentrated shampoo, which is pH neutral and won't damage your exterior trim or strip existing wax from the paint; Polish & Wax 3 Hybrid will help to restore your paint to its former glory, delicately polishing away fine scratches whilst building a durable, weatherproof layer; Brilliant High Gloss Wax is a paste-like wax with a high carnauba content and is easy to polish off leaving behind a protective layer and a perfect shine; for cleaning on the go, Brilliant Shine Detailer is a simple spray-on, wipe-off solution to keeping your car looking good between washes while Wheel Cleaner Plus is powerful, acid-free but tough on grime and brake dust – just spray on, wait for two to four minutes and then wipe off.

Price: From £5.99

Web:

www.saxon-brands.com





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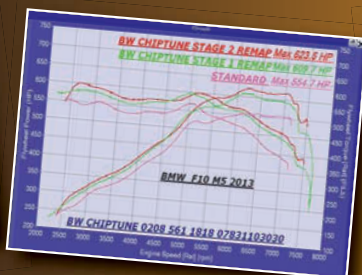
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FINCREDIBLE HULK

This might look like a mild-mannered E28
but you wouldn't like it when it's angry...

Words: Elizabeth de Latour Photos: Jape Tiitinen







E28s need love. They're getting rusty, rare and actually quite expensive to buy, certainly in the UK, and much like any classic they are not often casual, off-the-cuff purchases. You have to want an E28 because it requires commitment. Buying an E28 is a serious undertaking, one often reserved for lifelong BMW enthusiasts who've always wanted to own this classic saloon. Enthusiasts like Tobias Holmkvist, perhaps? "Well, when I bought this M535 my interest in the marque started to grow but I can't really say I'm a BMW guy," he reveals. Oh, guess not then...

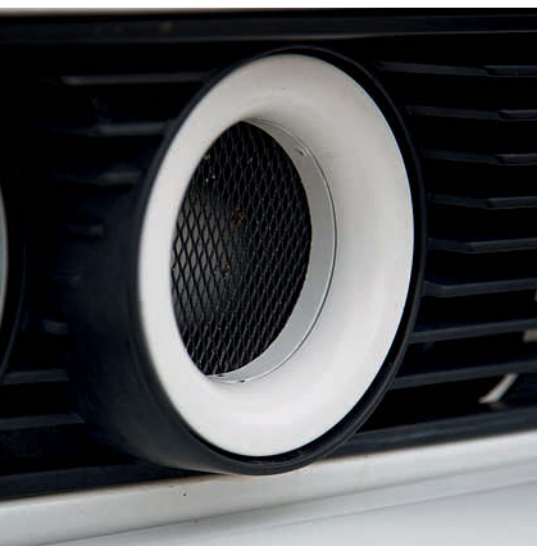
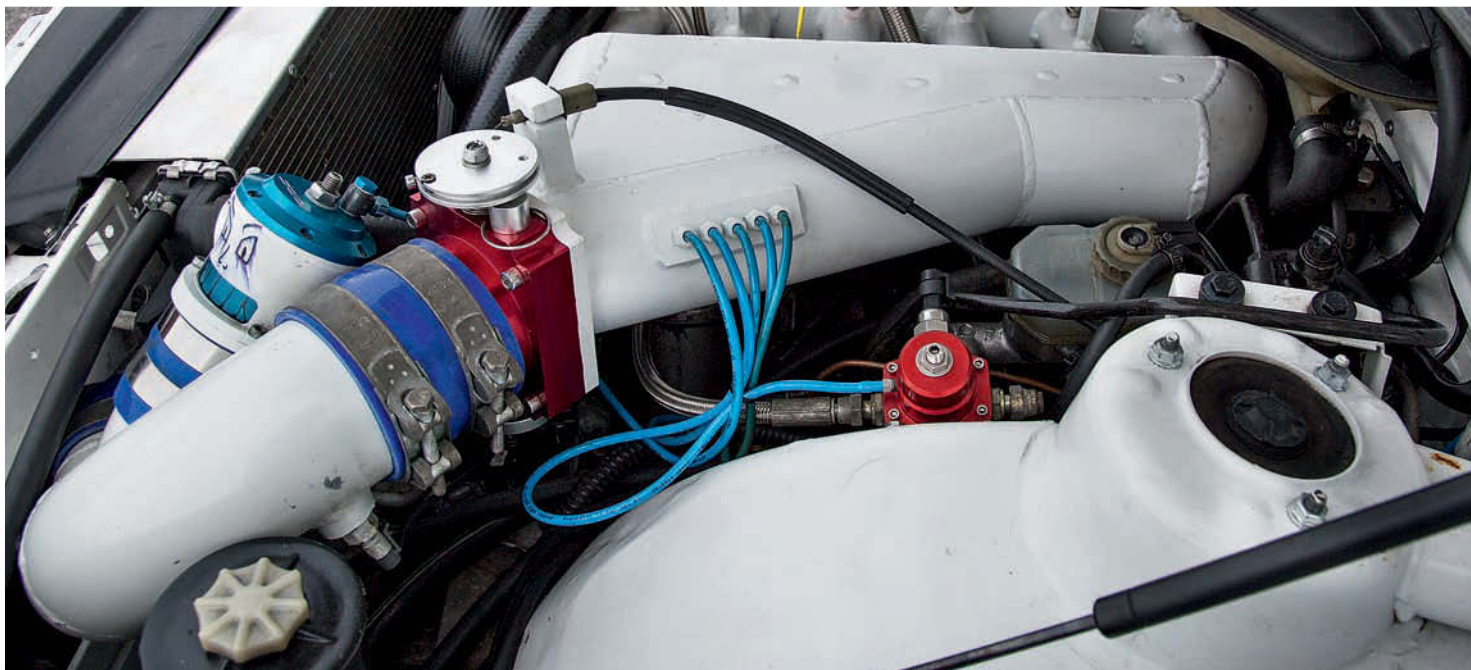
So, just what attracted this 20-something

car enthusiast to the sharkey E28? Well, for our Finnish truck body builder, this car presented itself as the perfect proposition for what he was planning. "I wanted to build a crazy car for street use," he says in the matter-of-fact manner that someone might use when telling you that they've just bought a new shirt. "And to me the E28 is an old and beautiful model, plus this car already had a lot of performance parts installed. It was in pretty bad shape, though, and needed a rebuild so I bought it to have something to spend my time on."

Purchased in Sweden, Tobias' E28 needed more than a little TLC to get it roadworthy again, requiring no less than a complete

interior overhaul, rust removal and a respray, making this far more than just a casual project. But then again Tobias is a man who enjoys a challenge and likes building cars that are a little different from the norm (such as the 415hp Mercedes diesel estate he built back in 2008), so the prospect of restoring this E28 and turning it into a fire-breathing monster was no doubt a tantalising one.

Now, if you want to build yourself a crazy powerful road car, you're going to need to build yourself one serious engine. Luckily the M30B35 is the perfect candidate for turbocharging and makes the ideal base for building up a serious powerplant. Tobias has



DATA FILE

ENGINE: 3.5-litre straight-six M30B35, bore increased by +0.5mm, stock crank, CP forged pistons, reinforced bottom plate to stabilise block, ported M30B35 head, ARP bolts, Enem Z55 turbo camshaft, steel rocker arms, Stage 2 valve springs, custom intake and exhaust manifolds, Precision 7275 turbo, 1680cc injectors, VAG coil-on plug ignition system, MaxxECU ECU, PWM-controlled electric water pump, PWM-controlled cooling fan, billet fuel rail, Precision 46mm wastegate, 4" downpipe with 3.5" exhaust and single silencer, 600x450x100mm intercooler with 3" inlet and 4" outlet. 886hp and 758lb ft @ 2.3bar

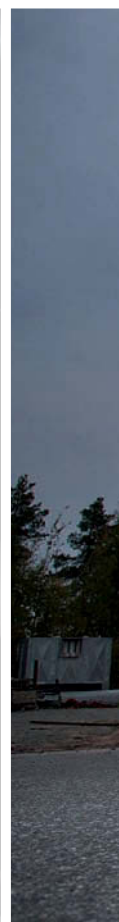
TRANSMISSION: Getrag Type D six-speed manual gearbox from E39 M5, Sachs 765 pressure plate, sintered clutch disc, home-made propshaft with M5 joints, LSD

CHASSIS: 8.5x17" (front) and 9.5x17" (rear) AC Schnitzer Type 1 Racing wheels with 225/45 (front) and 255/40 (rear) Federal semi-slick tyres, single-piston callipers (front and rear) with 348x30mm discs (front), 320x22mm discs (rear)

EXTERIOR: High beam air intake, E30 M3-style spoiler with custom gurney flap

INTERIOR: Full roll-cage, E34 M5 leather seats, custom leather doorcards, suede steering wheel and lowered steering column

THANKS: My friends that have helped me with this project, all your help has really been appreciated



left no stone unturned, or at least no engine component unmodified, in his quest for power. The engine has undergone numerous evolutions but the current spec is its most impressive incarnation.

First off, the block has been fitted with a reinforced bottom plate to stabilise it; it's been bored out by 0.5mm and CP forged pistons have been fitted, though the crank has been left stock. The head was ported by Tobias himself and fitted with an Enem Z55 turbo camshaft, steel rocker arms and Stage 2 valve springs while ARP bolts ensure it stays clamped tightly to the block. Initially,

Tobias was running a Holset HX55 turbo with a Megasquirt standalone ECU but he wasn't happy with the way the car performed. "The Holset was too small," he says, being rated for about 570hp, "so I removed the Megasquirt and the Holset and replaced it with the Precision turbo and MaxxECU engine management, which got the car running like a dream with better spool, more power and better engine control." The turbo in question is a 7275, rated to 1015hp, offering the sort of horsepower potential that Tobias was looking for. In addition, it's been fitted with

a 46mm Precision wastegate. The intake and exhaust manifolds were both made by Tobias, with a 4" downpipe running from the turbo into a 3.5" exhaust with a single silencer, while on the intake side there's a seriously beefy intercooler, measuring 600x450x100mm with a 3" inlet and a 4" outlet. You'll also find 1680cc injectors sitting on a billet fuel rail, a VAG COP ignition system, a PWM controlled electric water pump and electric cooling fan. It's a heavyweight list of mods and it results in some seriously heavyweight performance figures, with 2.3bar of boost resulting in

I wanted to build
a crazy car
for street use



886hp and 758lb ft of torque, which is more than any sane person could ever possibly need, but whether it's more than someone like Tobias could possibly want is another matter altogether...

To go with all that power, Tobias has opted for an E39 M5 gearbox uprated with a Sachs 765 pressure plate and sintered clutch along with a homemade propshaft with M5 joints and an LSD at the rear, which allows him to put down some very long 11s on the Tarmac. The brakes have also been uprated, naturally, with 348mm discs up front and 320mm items at the rear, offering much

needed enhanced stopping power. When Tobias bought the car it had already been fitted with lowering springs and uprated dampers, so he's suck with that combo, adding Powerflex bushes throughout and M5 anti-roll bars to try and quell the car's slightly tail-happy nature, though we wager that ramping up the power to over 800hp has probably undone most of his hard work on that front.

Of course, even when you're building a mental fast road machine like this, you can't forget about the aesthetics and while Tobias has kept things looking pretty OE on the

outside, there are plenty of hints that let you know this is most definitely not your run-of-the-mill E28. Up front, one of the high beam lights has been replaced by a colour-coded air intake that feeds air directly to the massive cone filter wedged into the corner of the engine bay, while at the rear you'll find an E30 M3-style spoiler crowned with a home-made gurney flap, complete with a message for anyone foolish enough to have attempted to tangle with this E28. And there's no need for multiple exhausts here when one fat tailpipe does the job just fine, thank you very much.

The AC Schnitzer Type 1 Racing wheels, Tobias reveals, were actually on the car when he bought it, and he liked them so much that he almost bought the car just for them, though they were in very bad shape and he spent 20 hours rebuilding them. Not that you'd know, mind, as they look absolutely spotless and the gold-on-white combo is pretty much perfect.

The interior is a blend of OE calm and hardcore aftermarket additions. "I had always wanted a car with a full roll-cage," explains Tobias, "so I decided to build one. A friend helped me with the TIG welding but

I built it myself. It was very hard to make but the result was very good. I also fitted a set of E34 M5 leather seats and I made my own leather door panels, suede steering wheel and lowered steering column." Tobias also chucked in a hydraulic handbrake, because that's the sort of thing you'd expect to see in a 800hp E28 that's very good at going sideways!

The boot is home to numerous fuel system components, plonked unceremoniously to one side, but with the most exquisite components and the engine bay most definitely deserves a mention

because while it might not be a polished-up show bay, it's very clean and tidy. We particularly love the colour-coded piping and intake plenum.

It's taken Tobias four years to get the car to where it is today, a slow steady process of annual evolution, and this E28 has become something of a beast. It's an epic machine that's fulfilled Tobias's brief of being "a crazy car for street use". Judging from the pictures, Tobias seems pretty happy with the results, too, and it's good to see a car like this being used in anger; then again, how else could you possibly use it? ●





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1 Series

Petrol
120i 2.0 16v (170bhp) +15bhp +20nm
125i 3.0 24v (218bhp) +20bhp +30nm
128i 3.0 24v (230bhp) +Call
135i 3.0 Twin Turbo (306bhp) +50bhp +65nm
Diesel
116d 2.0 D (116bhp) +50bhp +90nm
118d 2.0 D (143bhp) +40bhp +60nm
120d 2.0 D (177bhp) +40bhp +60nm
120d 2.0 D (184bhp) +35bhp +70nm
123d 2.0 D (204bhp) +40bhp +50nm

5 Series

Petrol
520i 2.0 16v (170bhp) +10bhp +20nm
520i 2.0 24v (170bhp) +10bhp +20nm
523i 2.5 24v (177bhp) +20bhp +20nm
523i 2.5 24v (190bhp) +15bhp +20nm
525i 2.5 24v (192bhp) +20bhp +20nm
525i 3.0 24v (218bhp) +15bhp +30nm
530i 3.0 24v (231bhp) +15bhp +40nm
530i 3.0 24v (258bhp) +15bhp +20nm
530i 3.0 24v (272bhp) +15bhp +20nm
535i 3.0 TT (306bhp) +40bhp +65nm
540i 4.0 V8 (306bhp) +35bhp +40nm
545i 4.4 V8 (333bhp) +40bhp +25nm
550i 4.8 V8 (367bhp) +20bhp +30nm
Diesel
520d 2.0 D (163bhp) +30bhp +60nm
520d 2.0 D (177bhp) +30bhp +60nm
525d 3.0 D (197bhp) +30bhp +55nm
530d 3.0 D (218bhp) +30bhp +60nm
530d 3.0 D (231bhp) +30bhp +60nm
530d 3.0 D (235bhp) +30bhp +60nm
535d 3.0 D (272bhp) +40bhp +70nm
535d 3.0 D (286bhp) +30bhp +50nm

X5 Series

Petrol
X5 3.0si 24v (272bhp) +15bhp +30nm
X5 4.8 V8 (355bhp) +35bhp +40nm
X5 M 4.4 Twin Turbo (555bhp) +35bhp +70nm
X5 Xdrive 3.0 Turbo (306bhp) +50bhp +70nm
X5 Xdrive 4.4 V8 (408bhp) +15bhp +20nm
X5 Xdrive 4.8 V8 (355bhp)
Diesel
X5 3.0 D (235bhp) +30bhp +60nm
X5 3.0 SD (286bhp) +30bhp +55nm
X5 Xdrive 3.0 D (235bhp) +30bhp +90nm
X5 Xdrive 3.0 D (245bhp) +40bhp +80nm
X5 Xdrive 3.0 D (286bhp) +40bhp +80nm
X5 Xdrive 3.0 D (306bhp) +30bhp +100nm

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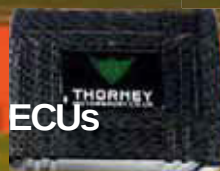
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3 Series

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316i 1.8 16v (115bhp) +15bhp +20nm
318i 1.9 8v (118bhp) +15bhp +20nm
318i 2.0 16v (143bhp) +20bhp +20nm
318ci 2.0 16v (150bhp) +15bhp +20nm
320i 2.0 24v (150bhp) +15bhp +20nm
320i 2.2 24v (170bhp) +15bhp +20nm
323ci 2.5 24v (170bhp) +20bhp +25nm
325i 2.5 24v (184bhp)
325i 2.5 24v (192bhp) +20bhp +25nm
328i 2.8 24v (193bhp) +20bhp +30nm
330i 3.0 24v (231bhp) +15bhp +25nm
Diesel
318d 2.0 D (116bhp) +30bhp +75nm
320d 2.0 D 136bhp +35bhp +70nm
320d 2.0 D (150bhp) +35bhp +60nm
330d 3.0 D (184bhp) +35bhp +60nm
330d 3.0 D (204bhp) +30bhp +75nm

X1 Series

Petrol
X1 Sdrive 18i 2.0 16v (150bhp) +20bhp +20nm
X1 Xdrive 25i 3.0 24v (218bhp) +35bhp +30nm
X1 Xdrive 28i 3.0 24v
Diesel
X1 Xdrive 18d 2.0 D (143bhp) +40bhp +80nm
X1 Xdrive 20d 2.0 D (177bhp) +40bhp +70nm

X3 Series

Petrol
X3 2.0 1.6v (150bhp) +20bhp +20nm
X3 2.5 24v (192bhp) +20bhp +10nm
X3 2.5 24v (218bhp) +15bhp +30nm
X3 3.0 24v (231bhp) +25bhp +30nm
X3 3.0 24v (272bhp) +15bhp +30nm
X3 Xdrive 2.0 1.6v (150bhp) +20bhp +20nm
X3 Xdrive 2.5 24v (218bhp) +15bhp +30nm
X3 Xdrive 3.0 24v (272bhp) +15bhp +30nm
Diesel
X3 2.0 D (150bhp) +35bhp +60nm
X3 2.0 D (177bhp) +40bhp +60nm
X3 3.0 D (204bhp) +20bhp +60nm
X3 3.0 D (218bhp) +30bhp +65nm
X3 3.0 SD (286bhp) +35bhp +55nm
X3 Sdrive 18d 2.0 D (143bhp) +40bhp +80nm
X3 Xdrive 20d 2.0 D (177bhp) +30bhp +60nm
X3 Xdrive 30d 3.0 D (218bhp) +30bhp +65nm
X3 Xdrive 35d 3.0 D (286bhp) +25bhp +55nm

X6 Series

Petrol
X6 Xdrive 3.0 TT (306bhp) +40bhp +75nm
X6 Xdrive 4.4 V8 (408bhp) +15bhp +20nm
Diesel
X6 Xdrive 3.0 D (235bhp) +35bhp +65nm
X6 Xdrive 3.0 D (245bhp) +40bhp +80nm
X6 Xdrive 3.0 D (286bhp) +40bhp +70nm
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PRODUCTION BMW... gone wild

Take a proven E30 race car, forget about the rule book and see what comes out – if you're lucky it'll be something like this: RAW Motorsport's 432hp E30 turbo.

Words: Ben Koflach Photos: Steve Hall and Louis Ruff @ Definitive



Over the years I've gotten to know a number of personalities and companies within the modified BMW world. Some come and go, and that can certainly be said for the companies behind many feature cars. However, there's one that's a little different – Robin Welsh and his firm RAW Motorsport have been in these pages countless times thanks to the supreme quality work and incredible cars that roll out of the firm's Southampton workshops, and the flow of incredible cars that Robin builds for customers seems constantly ongoing. For the first time, however, what you see before you is Robin's personal car, which he built from the ground up. As you might expect, he's gone all out – this one sets a new level in track E30s and won't be beaten for years to come.

RAW Motorsport has specialised for a number of years in the building and running of cars for the UK's budget-friendly BMW racing series, namely the Production BMW Championship and Compact Cup. Robin has not only been mechanically involved with much of the field of both series but has also raced extensively in both, with countless wins and podiums to his name. If you want to get noticed, building and driving winning cars is certainly the way to do it.

This experience has also led to RAW Motorsport building a number of road and track cars including feature cars, S50s, V8 E30s, serious track E36s... you name it, Robin's done it, with his skills ranging from roll-cage fabrication to engine builds. Over the years he's always had something interesting in his personal fleet, more often in bits while customer work keeps him busy

but 2014 was to be different; it was time to build something for himself, something more extreme than ever before, and something that would really show what he can do.

It all began with the E30 you see before you. Robin built it a few years back to Production BMW specification, meaning it received a 2.0-litre M20, Gaz coilovers and a stack of safety gear. He's always taken race car building seriously – no corners are ever cut with RAW-built cars as they're thoroughly reworked into seriously competitive and reliable race cars at the limits of the regulations. Therefore this one received the obligatory weld-in roll-cage, extinguisher, seat and other safety gear. The fuel and brake lines were re-run inside the car, it was painted throughout, and neat features like the carbon fibre doorcards to keep things light were added. These things



are done properly down at RAW and the workmanship speaks for itself with the race results and finish of the cars.

Retiring it as a race car probably wasn't the easiest decision for Robin to make but then when you have an idea like he had brewing, it's worthwhile. I personally feel a bit responsible for the initiation of the plan; I bought an S54 for my E36 Touring which Robin kindly offered to fit for me. The price? He'd eyed up the M52 that was at the time residing underneath my bonnet, and took that as payment.

Little did I know but he had some big things in mind for the engine and set to work on it as soon as my Touring was out of his way. The M52 had around 146k miles on it but, as has been proven with these engines, they just go on and on. All that was needed was a touch of strengthening and

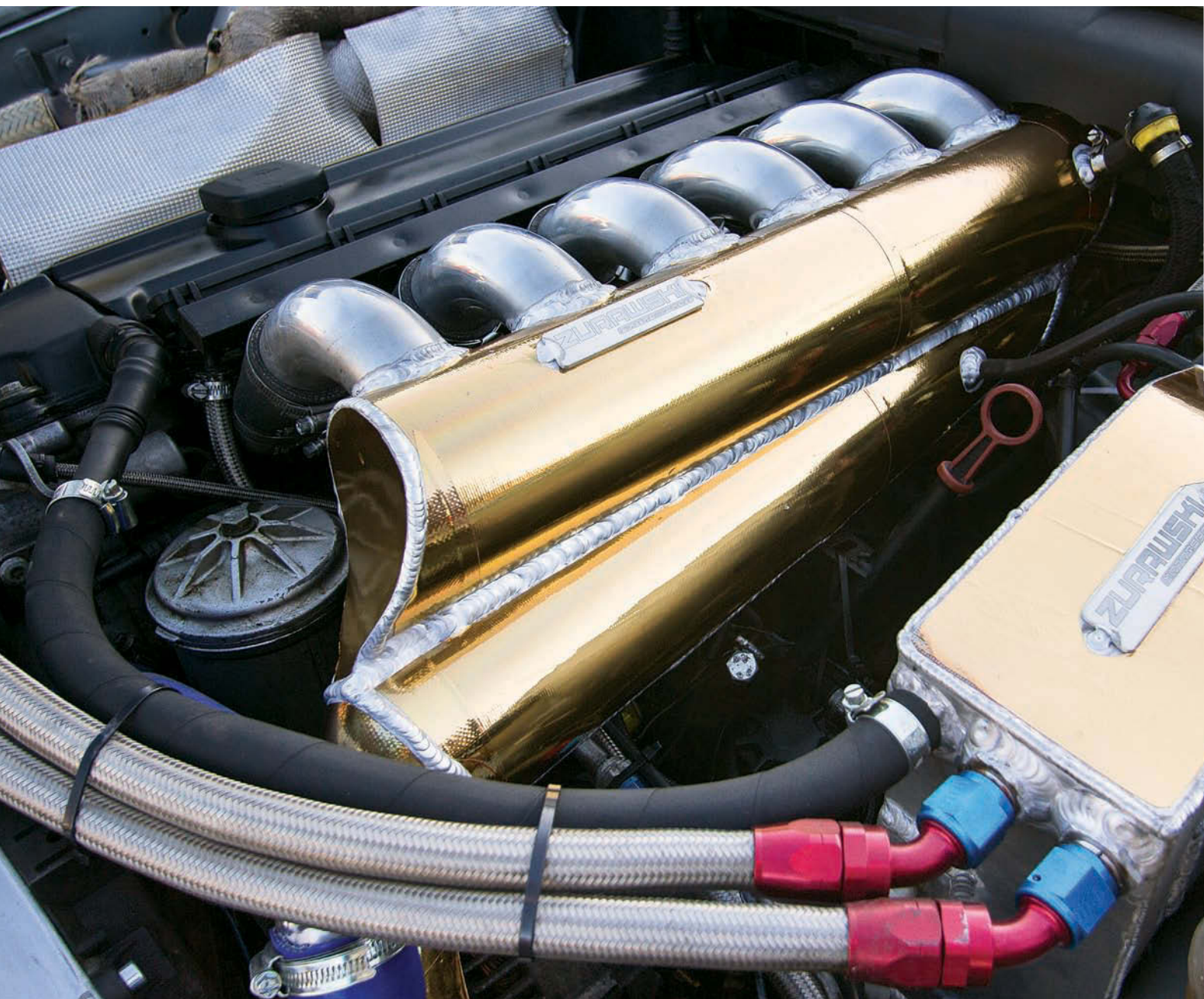
maintenance. Robin explains his methodology: "First I took the head off the M52 so that I could check the compression ratio," he explained. "BMW quotes the M52B25 at a 10.5:1 compression ratio – I didn't trust that so we cc'd the head and pistons, then measured the head gasket – sure enough it was 9.98:1!"

With this discovery, it was decided that a 0.3mm thicker Cometic head gasket would be used to lower the compression ratio to around 9.48:1 to retain the correct 'squish' while making things just that bit more boost friendly. Dropping it further would have meant the potential for more boost but as Robin pointed out, he values power delivery over outright peak figures: "I could have lowered the compression ratio more with an even thicker head gasket but with standard pistons the squish would have gone all

wrong. That makes it really hard to put proper ignition advance into it. I wanted to keep it low boost, high ignition to make it more lively and driveable. I wasn't after mega power figures that mean nothing in real life."

Next, the head was bolted back down using ARP studs and the sump was also swapped for a baffled front-bowl E34 M50 item to allow the lump to fit around the E30's crossmember and steering rack. This sump was also modified with an oil return feed, ready to be plumbed into the turbo. In the meantime, the engine bay had its battery tray cut out and the steering column linkage was swapped for a slimmer version than standard – all in aid of clearance for the turbo manifold and downpipe.

The engine was then reassembled and swapped into the E30. The modifications



already on the engine when I left it included an M50 inlet manifold, EvoSport power pulleys and a pretty trick UUC Stage 2 lightweight flywheel with an E34 M5 clutch, meaning that, along with the drop in compression, the M52 was ripe for some boost. Robin added a modified S50 oil filter housing to allow the fitment of a cooler then bolted the lump into the E30 using Vibratechnics engine mounts and wired the whole lot into an Emerald K6 standalone ECU, which would give the required mapping flexibility later on.

The next step was to get everything fitted in place ready for the car to be trailered up to Zurawski Motorsport, who Robin commissioned to fabricate the turbo manifold and other pipework. This included purchasing and fitting a Mishimoto alloy E36 M3 radiator and one of the firm's universal

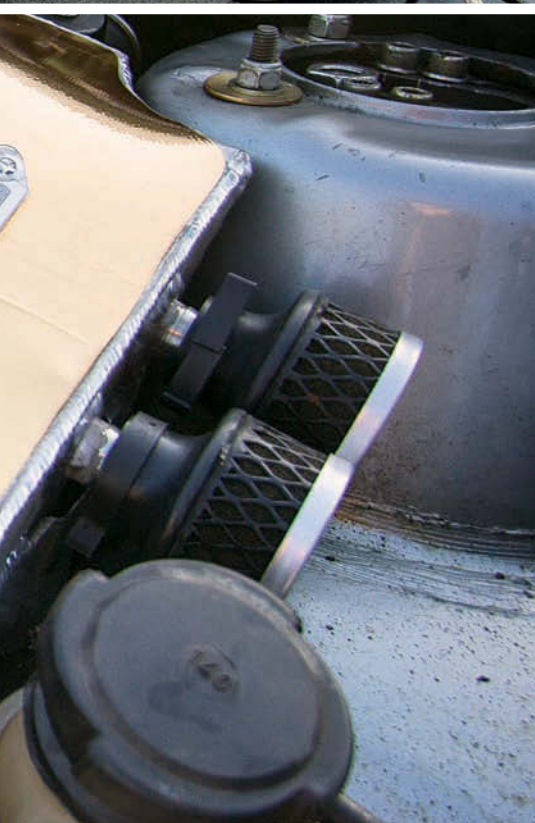
intercoolers. The quality and finish of these products really is fantastic and they're really great value for money, too, so they were a no-brainer for Robin. The front panel had to be quite extensively modified to allow neat fitment of everything without any garish looking exposed coolers which, as you can see, Robin has pulled off perfectly.

Another item Robin needed to have secured before the car went away was an exhaust system to mate the downpipe to. Having worked closely with Ergen Motorsport before, he opted for one of its E30 systems which features twin 60mm pipes throughout; this meant plenty of flow for the turbo. Oh yes, that turbo – Robin's initial specification, as seen here, used a Turbone RS35, which is basically a Holset HX35 with uprated internals. More on that later...

The final addition to be sent to Zurawski

Motorsport with the car was a bunch of goodies from Aussie turbo component supplier Turbosmart. It has been supplying all kinds of turbo accessories to top level motorsport for years now and Robin wanted nothing less on his project. He ordered up a pair of Hypergate45 wastegates (he needed two as the turbo and manifold were to be twin-scroll) with V-band fittings, a Race Port dump valve, a boost controller to be wired into the Emerald and a fuel pressure regulator to go with the fuelling system later in the build.

With everything in hand, Robin could trailer the E30 up to Zurawski Motorsport in Gloucester. Thomas Zurawski is a phenomenally talented engineer and fabricator – what he doesn't know about manifold design and fabrication isn't worth knowing. "I love my car and never before



DATA FILE

ENGINE & TRANSMISSION: 2.5-litre straight-six M52B25, Cometic multi-layer steel head gasket for 9.5:1 compression ratio, ARP head studs, ARP main studs, ARP con-rod bolts, ACL main bearings, ACL big end bearings, standard pistons with renewed rings, standard con rods, standard M52 head with three angle valve seats, Garrett GTX30/71R turbo, Zurawski Motorsport tubular equal length twin-scroll twin external wastegate exhaust manifold, Zurawski Motorsport 3" downpipe, Zurawski Motorsport wastegate piping, custom boost piping, twin Turbosmart Hypergate 45 wastegates, Pipercross air filter, Mishimoto intercooler, Zurawski Motorsport custom intake plenum, Ergen Motorsport 2.5" twin pipe exhaust system with single silencer, Turbosmart boost controller, Samco coolant hoses, E36 M3 oil filter housing, Mocal 25 row oil cooler with braided lines, baffled E34 525i sump with turbo oil return line, -10 braided line oil breather system, Siemens 660cc injectors, Bosch 044 fuel pump, two-litre swirl pot, Turbosmart fuel pressure regulator, custom fuel rail, braided fuel lines, Emerald K6 ECU, RAW Motorsport wiring loom housed in E30 M3 engine bay plastics, Innovate wideband lambda controller, Evosport underdrive pulleys, aluminium thermostat cover, uprated water pump, lower temperature thermostat, Mishimoto E36 M3 alloy radiator, Vibratechnics engine mounts, UUC Stage 2 lightweight flywheel, custom Helix Autosport clutch, relocated clutch fluid reservoir, E46 M3 SMG gearbox converted to manual, Z3 short-shifter, 3.07 final drive medium case differential with 75% lock 2-way LSD

CHASSIS: 8x15" (front and rear) ETO Rota Grid V wheels with 195/50 Toyo R888 tyres or 200/580 slicks, wheel stud

conversion. Avo monotube front coilovers, Avo twin-tube rear coilovers, Gaz adjustable top mounts with upgraded pillowball bearings, SLR front end kit including tubular rose-jointed wishbones and 25mm roll centre/bumpsteer correction, adjustable rose-jointed front wishbone bushes, Powerflex polybushed rear axle, Eibach anti-roll bars, strengthened front subframe, solid steering linkage, E46 'purple label' steering rack, steering rack spacers, braided power steering lines, Mocal seven-row power steering fluid cooler, HiSpec 310mm front big brake kit with six-pot calipers, Pagid RS29 front brake pads, Mintex 1155 E30 Challenge rear pads, RAW Motorsport ducting plates, braided lines throughout, brake lines re-routed inside car, Renault Clio brake servo and master cylinder

EXTERIOR: Vented front panel, lightened bumpers, tinted headlights, LWS Design carbon fibre bonnet, LWS Design carbon fibre bootlid

INTERIOR: Fully stripped, welded-in Production BMW specification T45 multi-point roll-cage with gusseting, Corbeau Evolution winged race seats, TRS Hans-friendly six-point harnesses, OMP steering wheel, carbon fibre doorcards, full extinguisher system, flocked dashboard, Innovate auxiliary gauges (oil temperature, oil pressure, AFR, EGT and boost)

THANKS: John Marshall at Turbosmart UK, Sarah Albright at Mishimoto, HiSpec brakes, Emerald, a massive man hug to Thomas Zurawski for making the manifold bits, Clive and Tom at RAW Motorsport and Tom's dad Roger

"The difference was clear straight away – the Garrett was making boost much earlier and was more responsive"

had I let someone else work on it, but I 100% trust Thomas's work," Robin smiled.

According to Thomas: "I think BMW engines are undervalued for turbo applications, especially the E30 and E36s. The engines are stronger than people think, too. For instance, I believe the M50/52 engine is stronger than the Nissan RB25 and definitely has better quality internals and engineering. The fact they were designed as a normally aspirated engine actually makes them really good for performance turbo applications as the cams overlap and make them breathe much more than turbo-ready engines. This is good because it means the turbo will spool quicker but there are a few dangerous mistakes that lots of people make when building turbo BMW engines, such as adding cheap exhaust manifolds or using small turbos, often fitted with the excuse of

'I just want a little bit more and don't want to kill the engine.' This is a huge mistake as a turbo that is too small will be restrictive and generate lots of deadly backpressure on the exhaust side. This is then made even worse with a log manifold because as the engine struggles to get the air out the internal temperatures rise and the inevitable happens. Another problem is the intake plenum, which is responsible for even distribution of the charge air. Standard M50 plenums aren't really designed for high performance forced induction and so starve cylinders one and six of air in relation to three and four, making a massive difference in combustion across the engine, making it inefficient. Only when we build a proper turbo system that allows the engine to breathe freely and evenly can the full potential be seen. Without the struggles of

excessive backpressure and unequal combustion we can actually tune the engine to its full potential and keep it reliable.

"On Robin's car we had to build a special exhaust manifold as he asked for the best specification possible and even if at the first glance there wasn't enough room for a high flowing independent runner manifold, I knew Robin wouldn't be happy unless it was perfect. I've spent many hours designing those runners around the steering column, suspension turret, chassis leg and the engine itself, and in the end we came up with nice equal length runners in a twin-scroll, twin wastegate exhaust manifold. Being a track car, noise was potentially an issue and so not only did the downpipe have to fit around everything else but it had to have ports for two removable wastegate dump pipes. It was tricky but I enjoyed building it. It's a



true one-off system.”

It was after this work, and the subsequent work by Robin to get everything together and mapped (making 357hp at 0.8bar with mild ignition settings, limited by clutch slip), that the car made its debut at Castle Combe, in August 2014, for the summer RAW Motorsport and Ergen Motorsport track day. So much excitement was surrounding the car and after the last minute addition of a HiSpec big brake kit for the front (fitted the day before) and a few last minute checks track-side, it was ready for its debut.

Unfortunately after only a couple of hot laps, it became very apparent that something had gone drastically wrong. Robin's choice of turbo, that Turbone RS35, had gone kaput in pretty spectacular style. The materials used in its construction,

unknown to Robin, just weren't up to the temperatures experienced during hard track use, and so the exhaust wheel quite simply shredded apart, along with the turbo's bearings. As well as this, despite a number of heat shielding precautions, the plastic cam cover melted, causing hot oil to spray all over the turbo. With the turbo damage at this time unknown, Robin sourced a metal cover from an early M52 from a local breaker's yard and fitted it there and then – however, it was unfortunately all in vain.

“Out of the whole build the only bit I was unsure on was the cheap turbo!” laughed Robin. “Lots of people said it would be fine and I'm sure for road or drift use it would last but it turns out with the extended flat-out use it gets on track it just gave up.”

With damage thankfully localised to

purely within the turbo, Robin was able to throw it away and start his search for a new item. He started his search at CR Turbos, based just a few miles from Bournemouth. Together they specified a Garrett GTX30/71R, and within a week Robin was back at the dyno to see how it would perform “The difference was clear straight away – the Garrett was making boost much earlier and was more responsive. I left the map the same as the power figures were much the same,” he said.

Since then Robin's also swapped out the ZF five-speed for an E46 M3 Getrag six-speed gearbox, which he converted from SMG to manual. The advantage of this is that an SMG box won't have crunched gears, which can cause notchiness on the M3 box especially, and this was bolted up with a Helix Autosport clutch – the

With RAW Motorsport constantly moving forwards and expanding, Robin's unfortunately considering selling the car or just the running gear as a plug and play swap, so if owning an extensively developed and extremely well-built M52 turbo with or without the surroundings of an E30 race car, sounds like your cup of tea then all you need to is find Robin's contact details over at: www.rawmotorsport.co.uk



previous item just wasn't up to the torque of the turbo'd M52. An LWS Design carbon fibre bonnet and bootlid made their way onto the car, too, shedding a number of kilos, while the front suspension received SLR arms to really sharpen it up and improve geometry. Robin visited the Nürburgring, Spa and a couple of domestic track days in the E30 over the summer with its reliability proving faultless since the initial turbo hiccup. However, Robin wasn't quite finished yet and so the E30 made its way back to Zurawski Motorsport for one final addition.

Thomas took up the story again: "Robin was always aware of the standard intake's limits. We'd originally planned to build one of my standard high flow design ones for it but I had a Nissan Skyline in my workshop with one of my special equal flow plenums

on it; I knew what would happen if I left the engine bay exposed and, sure enough, Robin saw it and his only words were 'I want that!' They are really special plenums that cause a bit of controversy on forums. They're equal flow but not the typical WRC design as I added a couple of my own features that result in quicker turbo spool and better throttle response. The new plenum required new intercooler pipes, but I have to say that it was an easy job after the exhaust manifold!"

Zurawski now offers twin scroll exhaust manifolds for M50/M52 and S50/S54 engines off-the-shelf and can also produce the equal length intakes to order, too. On Robin's car the power rose from just under 360hp to over 400hp with some map tweaking, but that's not the whole story. With the engine now combusting far more evenly across the

cylinders, Robin was happy to push the boost levels up to 1.2bar, resulting in a frankly ridiculous 432hp and 450lb ft. "The inlet manifold is working wonders," he reported. The car was actually on the dyno as I wrote my notes for this feature and was responding brilliantly to mapping tweaks – the sign of a well-developed and healthy engine. The M52 has become a precision instrument rather than purely a base for boosting.

When it came to building his own car, Robin has undoubtedly excelled himself. However, after all the hard work building cars for everyone else, he did deserve to spoil himself with this project. This E30 shows just what RAW Motorsport is capable of; it's simply extraordinary. Could this be the most complete track E30 that we've ever featured? Find one better, I dare you ●

SHARKNADO

Finished in VW Tornado red, sitting on bags and a truly unique set of wheels, this classic Six is coming on strong.

Words: Elizabeth de Latour Photos: Si Gray







Sometimes we come across a car that stops us in our tracks and that's exactly what happened when Máté Szócs' red E24 popped up on the *PBMW* Instagram feed. When that picture appeared on our iPhone, we knew the car in question was destined for the pages of this magazine, though Máté was blissfully unaware of this at the time. He was sitting at home in Hungary over 1000 miles away from the *PBMW* headquarters, possibly staring out of the window at his sexy E24, though we can't be sure. But we reached out to him, and by a stroke of good fortune both he and the car were heading to annual car-fest Wörthersee in Austria, putting him within shooting distance of a gaggle of photographers and suddenly we had a feature on our hands.

A feature of what, exactly? Well, it's an awesome, shiny red 6 Series and the first interesting thing is that this is an early 635 (from 1979), which aren't very common. This makes it E12-based, which means it's got the square E12 instrument binnacle. However, it also means it's got the E12's cool rotary heater controls, and if you can't get excited about a BMW's heating controls, you're not a true enthusiast...

The other, more striking and arguably more exciting thing is the wheels. Yes, they're gold but you might well be looking at them and thinking that they look pretty big. And they are, because they're 18s, and that's definitely not something you see on a 6 Series of this vintage very often. 18s on an E24 is brave, tucking 18s on a bagged E24 is impressive. But what the hell are they? Well,

first of all our UK readers will have to educate themselves on the Chrysler LHS, a rather bland American saloon sold both in its home country and Europe in the late '90s. If you Google said sedan, you will see that the first generation cars often came fitted with some intricate if rather uninspiring 16" wheels. But Máté didn't see small wheels from an American car, he saw potential and was struck by inspiration.

Previously he'd already managed to squeeze a set 18s on his Six (a stupidly wide complement of OZ Futuras, measuring 10" up front and 11.5" at the rear), so he'd already done the research and hard work required to get a set of 18s squeezed under the arches. The Futuras were subsequently sold, meaning the 6 Series needed a new set of rims and after a wheel like the Futura you



don't want to downgrade, which would be all too easy.

A set of 16s might not seem like the greatest place to start from when you've got dreams of show-stopping wheels in mind, but Máté knew where he was going to take these, and that involved turning them into three-piece splits, stepping them up to 18s before polishing the lips to within an inch of their lives and painting the centres gold. The end result is nothing short of stunning – the wheels definitely look big on the classic Six, but not stupidly so and the complex spiral centres look like they were designed using a Spirograph (turns out you can still buy them!). Compared with the OZs, the fronts here are a slightly more modest 9.65" while the rears are once again an arch-busting 11" wide. Not only are they a proper show-

stopping set of wheels, they are absolutely unique and that in itself is a massive achievement, so hats off to Máté for nailing it so comprehensively.

Of course there's more to this car than its wheels and the bodywork that surrounds them is no less impressive. From the sound of things this E24 was less than mint when Máté got his mitts on it, which is unsurprising considering how badly they can rust when not looked after. It had spent ten years in a garage so there were a lot of parts that needed changing in order to make it driveable once more and then it was a case of Máté putting his own stamp on it. The front wings have been widened by a surprisingly modest 15mm, just enough to help those front wheels tuck up into the arches, while the rear wings were replaced

altogether and the arches rolled. With all that bodywork going on a respray was required and Máté fancied a fresh new look for his freshly finished Six: "Picking a colour was not easy," he says, "I knew I did not want a metallic colour and in the end the colour I liked the most was VW Tornado red." This is the colour you see before you now and it looks perfect on the 6 Series.

Initially, this Six was static but then Máté decided to go down the air-ride route, partly for the practical aspect but mainly, we suspect, because he reckons it looks great with the car. No-one makes an off-the-shelf air-ride kit for the E24 so this was very much a custom job, using bags with the original dampers. It definitely works on all fronts and what's arguably most impressive is just how flipping low this car goes even

sitting on 18s. Inside, where you might expect to find an all-singing, all-dancing high-tech air management system, Máté has kept things decidedly old school with a pair of simple switch and analogue gauges and their utilitarian look sits well with the rest of the interior... Hold on. Are those E46 Sport seats? Yes they are. Okay. That's different. It also has a wooden gear knob and an original BBS steering wheel; well, it's a bit of mix, then, but you know what? It works, it really does, despite the fact that it's not the sort of combination most people would go for but then again this whole car is not your straight down-the line sort of build, really.

As for the outside, well Máté has worked

some serious magic out here too – all the mouldings have been removed and the whole car has been colour-coded in black and red. Where normally the E24 6 Series is sharp and angular, here it looks so very different, smooth and slippery and these subtle changes have made a big difference when it comes to the car's appearance.

The combination of super clean exterior and those big impact wheels is a heady one that really delivers a knockout visual blow. It's a devastatingly good-looking car, pure automotive sex and quite unlike any other 6 Series we have seen, which makes it instantly both brave and brilliant and we love it ●

DATA FILE

ENGINE & TRANSMISSION: 3.4-litre straight-six M30B34, dual 2" exhaust system, five-speed manual gearbox, LSD

CHASSIS: 9.65x18" (front) and 11x18" (rear) Chrysler LHS 16" wheels rebuilt as three-piece 18s with gold centres and polished lips with 215/35 (front) and 245/35 (rear) tyres, custom air-ride setup with air bags over original dampers

EXTERIOR: Resprayed in VW Tornado red, dechromed, side mouldings removed

INTERIOR: BBS steering wheel, E46 Sport leather seats, wooden gear knob, manual air-ride controls with dual analogue gauges



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NEW-MATIC

There aren't too many M3s that can claim to use simple pressurised air to create a completely new standard in E46s – meet Keith Landucci's supercharged, aired-out convertible.

Words: Ben Koflach Photos: Chris Umali

Belly scraping ride height, fag paper fitment, 493hp at the wheels... oh, and a drop top for the summer. The M3 has always been an everyday supercar slayer; a car that can be as comfortable driving to the shops as it is tailgating Ferraris at the Nürburgring or settling into a 160mph cruise along the autobahn, but Keith Landucci's E46 is taking things to a new level.

The 27-year-old New Yorker has owned this particular example for just over two years now, during which time it's undergone quite a transformation: "I purchased the M3 from Craigslist from a guy upstate," Keith told us. "It's been a car I've wanted since I was 16 – I've just always had a thing for M3s. It was completely stock bar a set of 20" Vossens." Keith spends his days spanningner

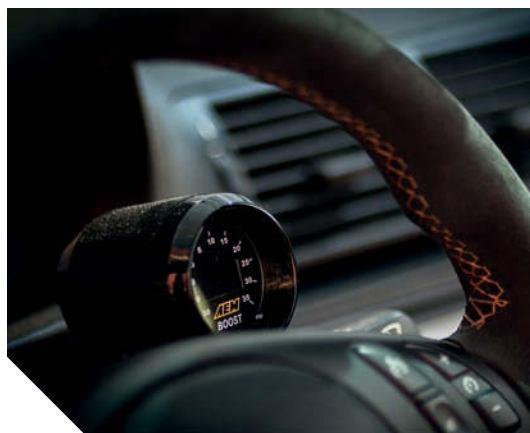
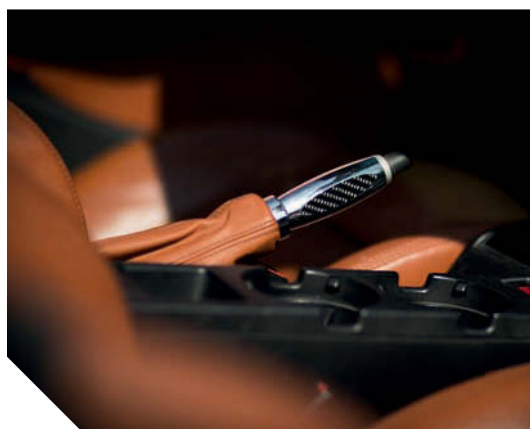
for Lexus, but in the evenings and at weekends his services go out to all of the stance family in New York – fender rolling, coilover fitting and just about everything associated are what Keith really enjoys, and so it was obvious where his car was headed.

"My work is all about dropping cars and rolling fenders to get that ideal fitment so my first big modification for the car was a set of Broadway Static coilovers with custom spring rates – it got the car sitting very nicely but just wasn't ideal for New York roads and I always wanted more power out of the car. After getting over 'static life' I went for bags to achieve the perfect fitment and a supercharger to gain some more power."

Not one to do things by halves, Keith purchased a Bag Riders V2 air setup and

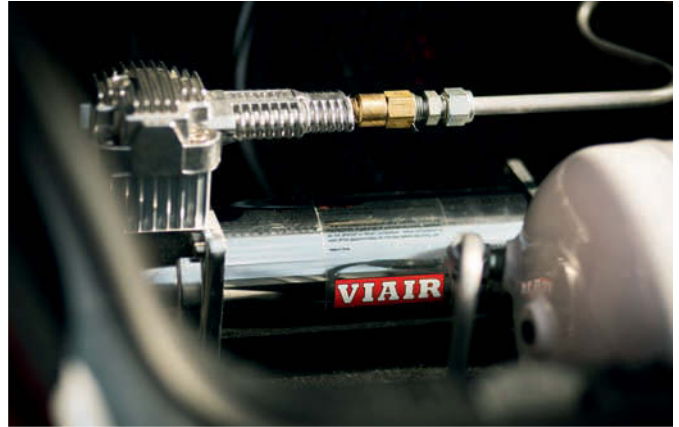
took the M3 down to renowned fabricator on the VW scene, 'Swoops'. As a specialist in hardline setups and many other forms of fabrication, the E46 benefited from a full hardline setup with a simple but perfectly executed boot build, housing a large colour-coded tank and twin VIAIR compressors, along with a pair of Kenwood subs. "I just wanted it simple and clean," commented Keith. "I did the air install, Swoops did the hardlines in the trunk and made the mounting board for it all."

With the suspension all dialled in to perfection and at this time riding on BBS RSs, Keith could get that added performance hit that he had been after all along. Within a month of the suspension being changed to use pressurised air, the engine was modified to do the same with an ESS supercharger to



Interior is home to fetching tan leather and a number of Alcantara and carbon goodies

Boot build has been beautifully executed, with hardlines and colour-coded tank, plus twin 12" Kenwood subs



force-feed it boosted air. The kit that he went for was the 550hp rated version which uses the tried and tested Vortech V3Si compressor along with the usual host of ESS goodies; larger injectors, a reconfigured breather system, CNC brackets and pulleys, a cast aluminium intake manifold and a chunky air-to-air intercooler. As well as all of this it comes with the necessary flash loader to put ESS's own map on to the M3's MSS54 ECU.

With Keith's spanning skills, he soon had the kit fitted, and chose the transformation as a great opportunity to rework the exhaust system, too. US-spec E46 M3s came fitted with power-starving exhaust manifolds which housed catalytic converters, dropping them 10hp in the book

figures and not doing any favours to the driving experience. These were first to go, and Keith fitted AP tubular headers in their place, with a Supersprint centre section bolted to the back of them. The final component was a Top Speed back box to seriously let the S54 scream; the noise really is quite something.

"When I drove it after fitting everything there was a huge difference!" Keith grinned. "I had the car dyno'd shortly afterwards and it made 493 wheel horsepower and 326lb ft of torque." For the initiated among you, let me save you breaking out the calculator – that's approximately 570hp at the flywheel – impressive stuff for a supercharger kit that is rated at 550hp with Euro manifolds.

The final step with Keith's build was to

get the bodywork looking flawless. His M3 was originally Alpine white and though he wanted to keep it white in colour, he had a bit of a twist in mind. "I've always been a fan of white, but I wanted something brighter that just popped," he told us. "A shop around me called Impressive took on the work."

Keith's wish list was lengthy, and included some challenging touches. First up, the front bumper was to be replaced with a Vorsteiner CSL version, with the CSL's distinctive intake hole blanked out and the tow hook cover smoothed over, too. The rear end had already benefitted from a CSL diffuser, but this was to be smoothed into the bumper. Finally, the rubstrips were to be removed and smoothed and the Vorsteiner CSL

bootlid was to receive a once-over too. And the colour? He went for Lamborghini Bianco white, which as you can see really does pop as he'd hoped.

As you can imagine, with Keith being a such a stance king, he's a bit of a wheel whore too. The M3 has had countless sets of rollers, including the aforementioned BBSs along with Work VSS splits, Work Equips, CCW Classics, square 19" OEM wheels – you name it, Keith's had it under his arches. His latest setup, however, smashes everything else out of the water. What you're looking at are VIP Modular VXS610s, measuring a frankly ridiculous 11x18" up front and 12x18" at the rear, with offsets in the single figures. As you can no doubt imagine, squeezing these under even the M3's bulbous arches was quite a task, but all part of the plan – Keith's running some pretty serious

stretch along with around six degrees of negative camber up front and a ridiculous nine degrees at the rear. It's all part of the game, and the final result is something that understandably leaves plenty of jaws dropping almost as low as the car itself.

Keith's M3 may not be for everyone, but there's no denying that he has covered plenty of the bases with his build. It has the looks to die for without sacrificing quite all of the practicalities, he's got plenty of comfort and it also has the performance to kill just about any competition he comes across on the tough streets of NYC.

That sounds pretty good to us but Keith, as ever, is far from done. "For next season I'm doing cams, redoing the interior with a roll-cage and of course, more wheels!" he grinned. This is one M3 project to keep your eye on... ●

Stunning VIP Modular 18s measure an outrageous 11" wide up front and 12" at the rear



DATA FILE

ENGINE & TRANSMISSION: 3.2-litre straight-six S54B32, ESS VT550 supercharger kit (consisting of Vortech V3 Si-trim supercharger, front mount intercooler, cast aluminium intake manifold, high capacity bypass valve system, mandrel bent tubing, self tensioning belt system, CNC brackets & pulleys, oil breather system, silicone hoses, ESS fuel pressure system, Bosch injectors, K&N air filter, ESS software with removed top speed limiter), AP cat-less headers, Supersprint mid-pipes, Top Speed back box, six-speed manual

CHASSIS: 11x18" ET8 (front) and 12x18" (rear) ET6 VIP Modular VXS610 wheels with in 235/35 (front) Falken and 285/30 (rear) Nankang tyres respectively. Bag Riders V2 air suspension with custom system and hardlines. CSL front brake setup using 345mm discs, standard rear brakes

EXTERIOR: Full respray in Lamborghini Bianco white, Vorsteiner CSL front bumper with blanked/smoothed air intake and tow hook cover, one-piece carbon fibre CSL splitter, Vorsteiner CSL bootlid, smoothed-in CSL diffuser, shaved door mouldings, shaved tow hook covers, colour-matched hardtop, blacked out headlights with LED angel eyes

INTERIOR: OE tan leather interior, Alcantara-trimmed steering wheel, carbon fibre and chrome handbrake handle, AEM boost and AFR gauges, custom boot build housing air components and twin Kenwood 12" subwoofers

THANKS: All of my customers for their support in choosing to come to me to get their work done. Without them I'd be broke and wouldn't be able to have the build at the level I have it at





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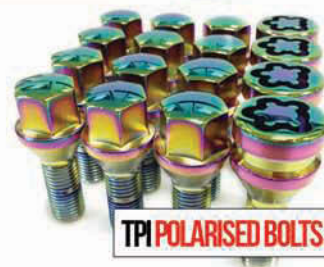
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THE POWER OF THREE

This searing yellow M3 is proper movie star stuff. AUTOcouture Motoring's Sal Benanti has pulled together a stunning build that'll have you questioning the merits of that M4 coupé...

Words: Daniel Bevis Photos: Matt Petrie

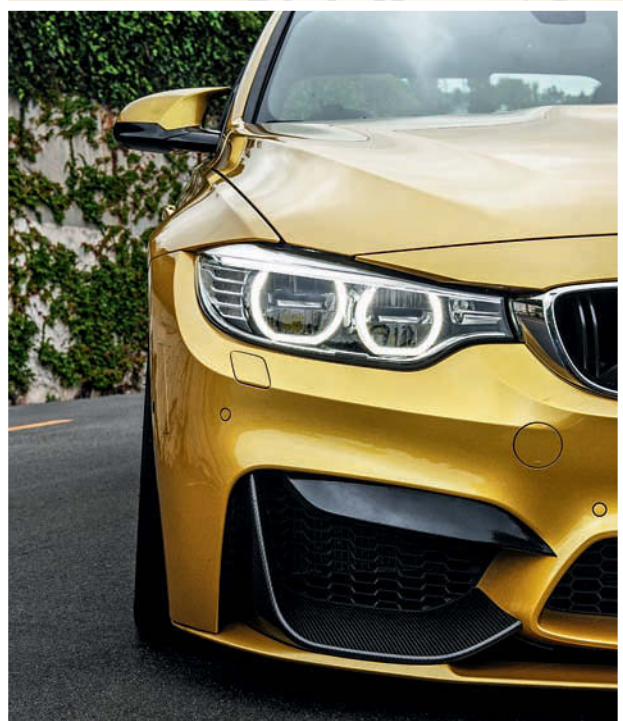
Fans of big-budget Hollywood remakes will be familiar with 2001's *Ocean's Eleven*, the star-studded reworking of the 1960's Rat Pack original. George Clooney and Brad Pitt offer the wisecracking eye candy, Matt Damon is pre-*Bourne* but stellar, and Julia Roberts finds herself on a sort of ruby-encrusted pedestal. But the real sleeper of the cast is Carl Reiner's character, Saul Bloom. He's a tough cookie, he's brimming with experience, he won't put his name to any half-measures, and his demure exterior belies a certain level of excitement at the prospect of doing something a bit naughty. It's probably no coincidence that *Breaking Bad*'s Saul Goodman shares the moniker, they're ideologically similar. And a further namesake, save for an errant vowel that

we'll happily overlook, is Los Angeles' favourite BMW fettler, Sal Benanti. He owns a chain of BMW-specialist tuning shops under the name of AUTOcouture Motoring, and what he doesn't know about cranking the awesomeness of a Bavarian motor up to 11 probably isn't worth knowing. And he's a man who knows quality too – he'd never allow a build to get out of the door with his name attached if it had gone off half-cocked. There's a reputation to uphold, and it stands to reason that a man such as this would drive something that creates a statement to represent his business interests – hence the fresh new 2015 M3 you're looking at here. It's his, of course, and it's rather splendid.

What's interesting here as a starting point is the conscious decision that's been made to roll with an M3 rather than an M4. Now,







most of you will be well versed in the history of the various 3 Series that have an M on the bootlid and a sprinkling of stardust in the chassis, but for the uninitiated, here's the dime tour: the iconic badge has previously appeared on five generations of 3 Series – the first was developed on the 1986 model-year platform, the E30 M3 featuring a racy 2.3-litre four-cylinder motor. It was near enough unbeatable in motorsport, and road cars' values are spiralling nowadays.

The E36 followed in 1992, packing a straight-six; the E46 followed suit in 2000, and then the E9x switched to V8 power for 2007. What's notable about that generation is that each body style is separately designated – the E90 being the saloon, E92 coupé, and E93 convertible – whereas previous generations hadn't. An E36 was an E36, whatever shape it

was. Why bring this up? Because the latest-generation M3 isn't always even an M3. The 2015 evolution of the bloodline, the F80 chassis based on the F30 3 Series, is the sensible cousin to the F82 coupé variant (and, to a lesser extent, the F83 drop-top). But before we drown in a swamp of model codes, let's get to the crux of the matter: the latter two, the coupé and cabrio, are badged as 'M4'. In line with the company's naming strategy, an Audi-baiting niche had to be built – so the M3 still exists, but only in four-door form. It's a conscious and deliberate decision, then, to purchase one. There are two reasons for buying a new M3: either you crave or need the practicality of a more-door, or you're keen to tap into the heritage of the fabled M3 name.

Both of these options suit Sal down to the

ground. "I've loved BMWs since I was young," he explains. "My uncle had one of the first E34s in the States, a 1989 535i, and I've been hooked since! My first ever BMW was a 1995 530i, because it reminded me of my uncle's car and also had some rare options, and in later years I've always had current-model M cars – so when BMW released the 2015-model M3, I just had to have it." This taps into that keenness for heritage we were talking about – with his name on the logbook of various M-cars in the past, it's only right that the he should have the latest version. As formidable as the M4 is, it just doesn't have that badge, does it?

Now, the idea of modifying a brand-new car may be troubling to some of you. It'll kick your warranty in the teeth, for a start. But remember that we're talking about a



DATA FILE

ENGINE & TRANSMISSION: 3.0-litre straight-six twin-turbo S55B30, Gintani remap, Eisenmann stainless steel exhaust with resonated mid-pipe and Gintani primary cat delete, six-speed manual

CHASSIS: 9x20" (front) and 10.5x20" (rear) HRE 303M wheels with 255/30 (front) and 285/30 (rear) Hankook tyres, KW Clubsport two-way coilovers, factory-option carbon-ceramic brakes

EXTERIOR: Austin yellow paint, M Performance carbon fibre splitters with colour-matched M Performance lower tray and M4 side skirts (modified to fit M3 saloon), Mode Carbon M4-style carbon fibre rear spoiler, RKP carbon fibre rear diffuser

INTERIOR: ACM Exclusive P3cars vent gauge, AT carbon fibre steering wheel trim

THANKS: My wife Kelsi for always supporting me, my awesome staff at ACM and ACM West, Tito at HRE Wheels for answering my million questions, Eric at YTS, Armando at BMW NYC for the aero, Sam and FG at United Collision for the awesome paintwork, the guys at IND-Distribution for supplying some parts, and all of my sponsors

kingpin in the BMW modifying realm – there are plenty of people who want to enhance their new purchases, and Sal needs to be leading the charge, walking the walk, demonstrating his prowess. He needs to be visible. And he takes that notion very literally indeed... I mean, look at the colour! While BMW has always offered a sober palette for the model, there's also always been a niche selection of hues for the extrovert (look at the E46's vibrant Laguna Seca blue, for example, or the brave embodiment of gastric distress that is Phoenix yellow), and this is the box that Sal's ticked with his eye-catching Austin yellow paint. While it may look odd on a context-free swatch, it actually picks out the lines of the F80 in fine style. It looks pretty damned good, we reckon.

Of course, the best can always be better, and that's why this project is proudly wearing HRE rims. "The history of the brand speaks for itself," Sal grins. "Around the same time that I bought this car – brand-new from Paul Miller BMW in New Jersey – HRE was releasing its new classic line, and I thought it'd be a great opportunity to show off a new BMW with a new HRE design." So the M3 is now wearing the frankly gorgeous HRE 303M in an arch-squeezing 20" diameter – staggered, natch, with a sturdy nine inches of girth up front, the tail packing ten-and-a-half. We know, though, what happens when you whack bigger wheels on to a stock suspension setup – arch gaps galore – so, as you've no doubt guessed, something's been going on in the suspension area. Specifically, we're looking at a KW Clubsport coilover setup. "I went for

two-way coilovers, because the car sees both street and track use," Sal explains. Remember what we were saying about him walking the walk? Yeah, he tears down and reworks brand-new cars – and he tracks them too. Why the hell not, eh? You only live once.

The M3 is a phenomenally accomplished piece of kit in stock form, that goes without saying. You'd have endless fun with an unmodified car and possibly may never wish for more – when you're looking down the barrel of 430-odd horsepower, the 0-62mph dash despatched in four seconds plus change, carbon-ceramic brakes and all manner of other trickery, it delivers on a lot of promises. But once Sal had made designs on the chassis, it was only natural that a few power-related shenanigans would follow shortly after: "The ECU was remapped by

Gintani,” he reveals, “and the guys also helped out with the primary cat delete to complement the Eisenmann stainless steel exhaust with its resonated mid-pipe.”

Aside from Gintani’s involvement, all of the work on the car was carried out at either AUTOcuture’s New Jersey shop or its California counterpart, and the overall ethos has been to enhance rather than alter. The notion is to acknowledge the brilliance of the engineering and find ways to remove the compromises of mass-production, and as such it’s a case of ticking the correct option boxes and then shaking things up a bit. Look at the interior, for example: “BMW did a nice job with styling on these add-on OEM parts, so I went with them,” says Sal. “I typically have an overall plan when purchasing a car, and this one was no different. I had an idea

of what I wanted to do, and I feel that AUTOcuture Motoring and myself hit the nail on the head with it! Other than our exclusive P3cars vidi gauge, the interior is all stock; the car came with carbon-fibre trim from the factory, and the seats are great too.”

Taking stock, then, we can surely agree that Sal’s efforts have done much to work with the already solid base of the near-peerless M3. That outrageous shade of yellow really flows with the muscular form, and that boisterousness carries over perfectly to the vast HRE wheels, close as they are to arches that find themselves significantly closer to the ground. It’s got the cojones to back up the looks, and it’s so boxfresh that it could be a poster boy for aftermarket ‘New Car Smell’ air fresheners.

“I have to say, my favourite modification

is the KW suspension,” says Sal. “It’s really tightened up the car to how I believe it should have been from the factory. And the looks have been well received too – the first show I took it to was XS Car Night in Long Beach, and people loved it! I received many compliments that day. And if money were no object? I honestly wouldn’t change a thing, I love how it’s turned out. Although there’s always the possibility of upgrading the turbos...” Well, we wouldn’t expect anything less from a man who’s sat himself on the bleeding edge of the North American BMW tuning scene. The question is, would you pull the trigger on buying yourself an M4 now that you’ve seen what’s achievable with the all-new M3? Sal’s naughty yellow saloon certainly makes a compelling case. That badge counts for a lot ●

“If money were no object I honestly wouldn’t change a thing, I love how it’s turned out”



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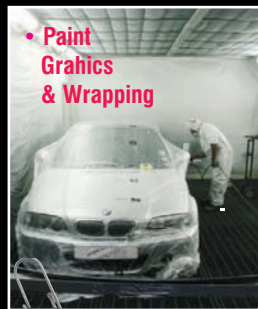


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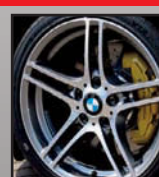
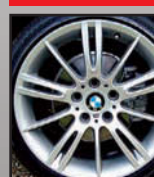


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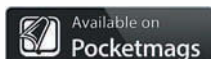
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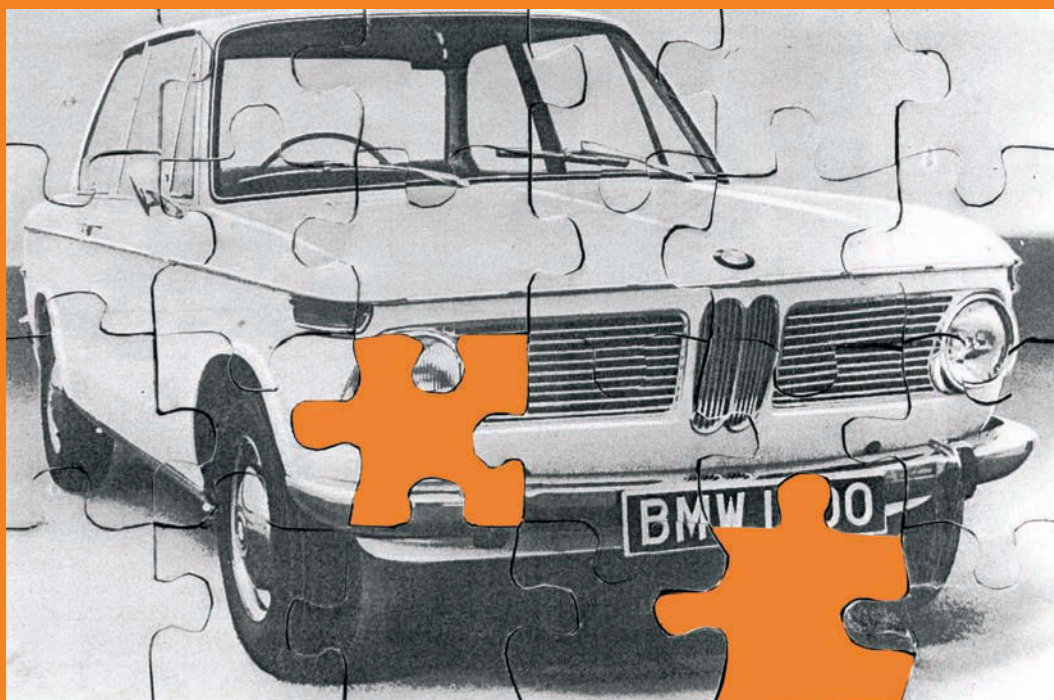
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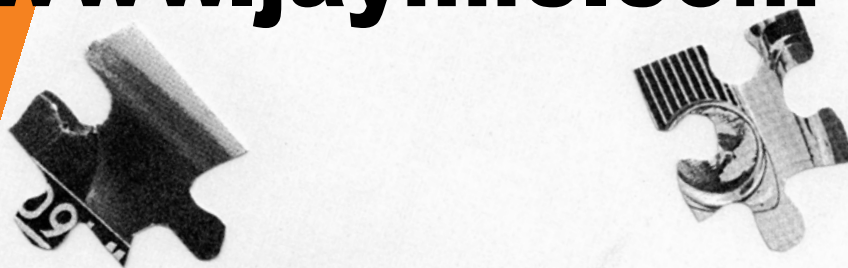
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Nominative determinism is an interesting idea. It's a very real thing, positing that certain people's futures tend to be mapped out by the name that they're born with. For instance, the poet William Wordsworth, the racing driver Scott Speed, the meteorologist Amy Freeze, the urologist Dr Dick Chopp (who specialises in vasectomies and really does exist) and the tennis player Anna Smashnova – it can't be a coincidence that these people have pursued careers that fit their names.

It follows, logically, that while people's future paths can be shaped by name, there may exist for creatures and objects a sort of 'colouration determinism', where destiny can be informed and coerced by hue and saturation. Peacocks, for example, strut about like they own the place because they've evolved feathers that allow them to do so, and they revel in it. Little blue show-offs. It's a self-fulfilling cycle. What does all this have to do with the pair of old-skool 2002s we're looking at here? Ah, all will become clear. But it concerns, of course,

their respective shades of orange...

To begin at the beginning, what we have here are a pair of home-built '02s that offer far more horsepower than the factory ever envisaged – for we are in Sweden, and that's just what they do here (the winters are long, there's not a lot else to do) – built up by a father-and-son team. EWO 172 is a 1969 2002 Ti belonging to Mats Örnberg, and follows a classic approach to the pursuit of power: OEM+ tuning and a solid retro vibe. GEF 588 is the pride and joy of his son, Pontus, and takes a rather more boisterous



approach, being a previously humble '02 with the naughty spirit of the fabled 2002 Turbo woven into its DNA. So let's start with the older generation first, shall we?

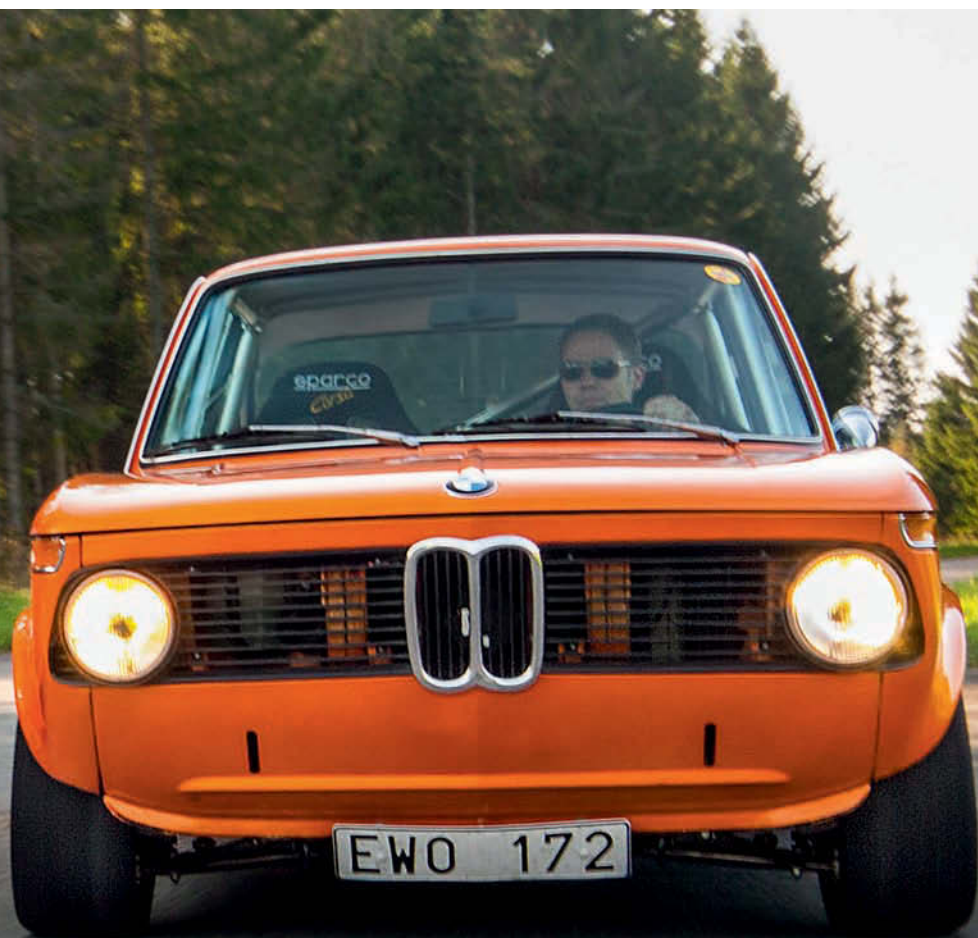
Mats' 2002 wears Lamborghini Mica orange paint, a shade that suits the sharpened angles of a Murciélago down to the ground. In this instance, returning to our notion of colouration determinism, it speaks of style, chic, passion and flair – the attributes of a carefree Italian outlook, *la dolce vita* made solid. And as such, Mats has treated the engineering of the car with the

reverence it deserves. "We found the body in a barn back in 1996," he recalls. "When I first built the car up it was running an M10 engine; having fixed up the rust and fitted the steel arch extensions, it was on the road by 1998 in its first guise. The motor was lightly tuned and I ran it that way for a number of years, during the summers that is, with the modifications and upgrades happening over the winters."

This is a stock tuner phrase in Sweden – it must be terrifying being an elk or a beaver in the springtime over there, when the snow

melts and all the nutters emerge blinking from their garages, ready to deploy the extra horsepower they found over Christmas. "I bored it out to 2.2-litres, fitted spikier cams, fettled the suspension, experimented with bike carbs... and then around 2005 or 2006 I fitted the M3 engine." He says this as if it's the most natural thing in the world. Maybe, for him, it is.

The E30's S14 four-pot is a formidable thing; its architecture spawned from the M10, so it's an entirely appropriate evolution for Mats's build, and it's the one four-



SWEDISH METAL

Two 2002s, two very different approaches. A father and son team have put together this formidable pairing of modified BMWs, both brimming with citrusy goodness...

Words: Daniel Bevis Photos: Patrik Karlsson



Örnberg senior has opted for a more subtle build, though it's a serious machine under the skin



cylinder engine that, generally speaking, the hardened BMW six-pot fan will make a concession for. It has the weight of history and motorsport prowess hanging from it.

"Everything from the 2002 suited the swap," he grins. "The motor mounts, oil pan, oil pump, the gearbox... the M3 manifold had to be modified a little, and a new exhaust system had to be built, but on the whole it fitted very happily." Makes it sound easy, doesn't he?

So in essence he found himself with a classically-tuned 2002 with 199hp at the wheels, something that would have raised a few Bavarian eyebrows in period. The fact that he's rocking a set of motorsport-chic BBS RS wheels and debumpered the thing like a race car merely adds to the feel of 1970s track shenanigans. He's got buckets, harnesses and a cage in the stripped interior, too, because that's how a car like this is supposed to roll. Mats has been developing it for years, and this is its ultimate evolution. (Well, 'ultimate' in the sense of 'latest', at least. We very much doubt he's finished with it yet.) "All of the renovations and modifications were carried out by me, save for the paint and a few minor jobs like aluminium welding," he explains, which makes perfect sense really. You can't be nipping to the local garage every five minutes if your workshop door's wedged shut by a snowdrift.

So if Mats' car is informed by the suavity of Lamborghini orange, what's the citrus situation with Pontus'? Well, his 2002 is slathered in a shade of Harley Davidson orange, which really should act as a statement of intent. This is a colour that

forgoes any sentiment of subtlety in favour of brash, forthright shoutiness. It beats its chest with fury like a wronged, bearded leviathan in a Southern biker bar. It doesn't ask, it just takes.

"This all started in 2012, when Pontus was just 16," says Mats, immediately shaming most of the dads of our readership into rethinking their 'birthday present ideas' list. "He asked me if I could give him some help in working on a 2002 with a turbocharged engine. I told him to talk to my brother-in-law about it, as he had a 2002 that he'd built and registered with a turbo – and it turned out that he'd tired of it and started to strip and sell the parts, so Pontus bought the whole thing and that became the project! We worked on restoring it together, with a new turbo and engine management system, as well as replacing the gearbox and differential, which are from an E28 528i. We also had to scratch-build a whole new fuelling system, and build up the new coilovers, and set up the new front brakes which are from a Porsche Boxster, and..." Well, the list goes on and on. This is very much not a case of tidying up someone else's project; what Mats and Pontus have achieved here is to take the lessons learned from the former's protracted dabblings in 2002 fettling and reimagine it for a Generation Y outlook. Forced induction, multi-marque part-sourcing, great big rims with broad rubber, these are all the touchpoints gleaned from a childhood spent poring over Gatebil coverage, and GEF 588 is the natural coalescence of influences old and new.

"We had some heat issues with the downpipe in the beginning," Mats continues.



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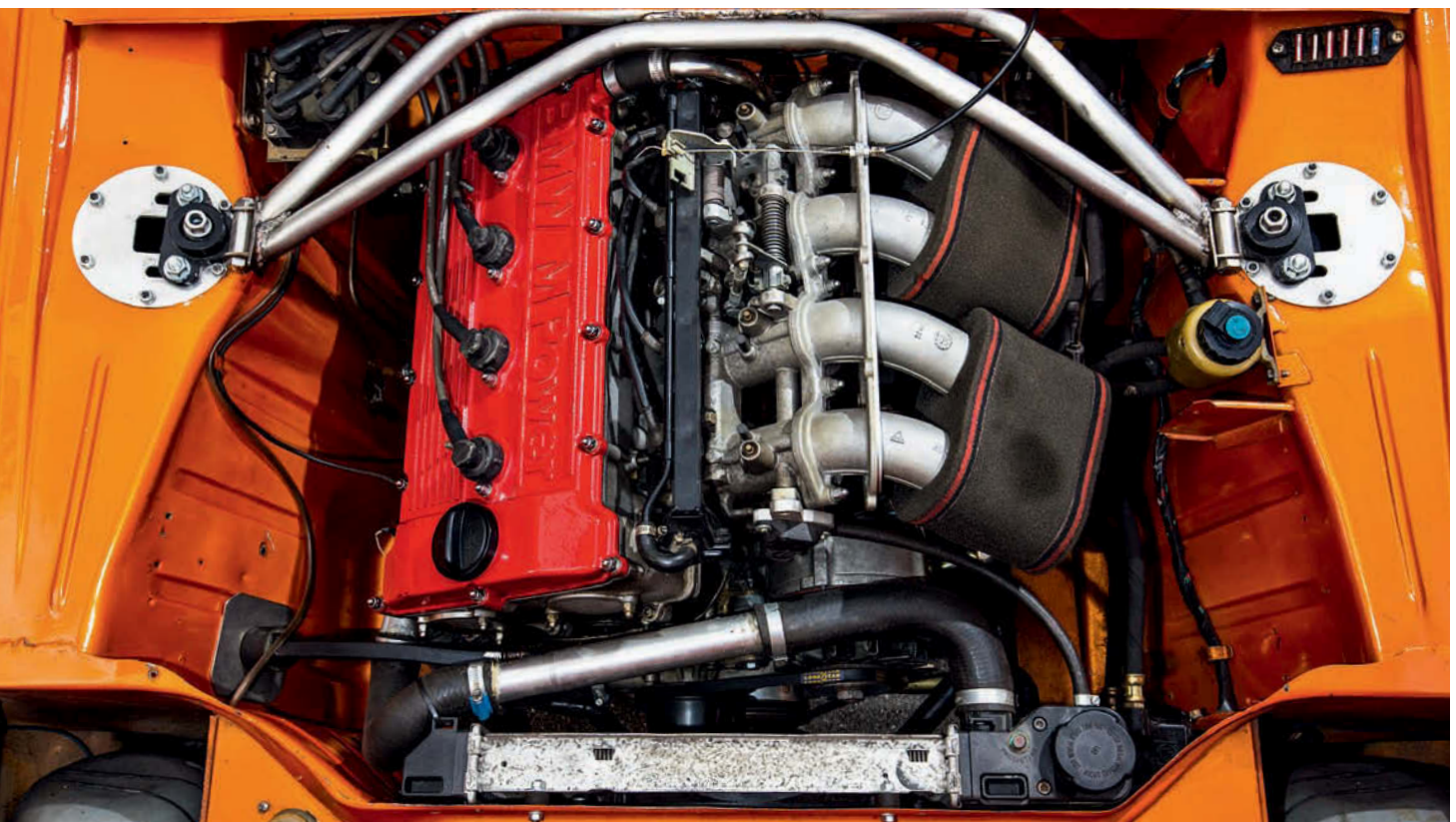
ENGINE & TRANSMISSION: 2.3-litre four-cylinder S14B23, reground camshafts, airflow meter removed along with intake manifold chamber, Hestec ECU, Bosch motorsport coil, 2.5" exhaust with two full-flow silencers, five-speed dog-leg box, M3 clutch, E21 diff with 75% LSD, 4:10 ratio, 199whp 192lb ft

CHASSIS: 7x15" (front) and 8x15" (rear) BBS RS wheels with 205/50 (front) and 225/45 (rear) Toyo R888s, Bilstein front coilovers with 600lb springs, tube control arms with spherical plain bearings, blade-style anti-roll bars, Bilstein rear dampers with 350lb springs

in original position, reinforced control arms, urethane bushes, Brembo four-pot front calipers with 295x28mm discs and Performance Friction pads, Audi A4 rear calipers with 256x10mm discs and Audi pads, adjustable brake balance

EXTERIOR: Resprayed in Lamborghini Mica orange, steel arch extensions, debumpered

INTERIOR: Soundproofing and rear seats removed, Sparco Corsa seats, four-point harnesses, six-point aluminium roll-cage, oil temp and pressure gauges





Örnberg junior, meanwhile, has gone for a rather more extreme machine, and it packs a serious turbocharged punch



"The spark plug wires melted, so we had to make a new manifold that would position the turbo a bit further away from the engine. But in general, that's really the only problem we faced." Again, he's making it sound simple. What's residing beneath that Harley-jaffa bonnet is really anything but: a 2.0-litre motor stroked out to 2.2, with robust pistons and rods, and a Borg Warner S200 boosting happily and filling the system with cheerfulness. The block itself has been partially concrete-filled, an old drag racing trick that adds strength to the cylinder walls and deadens internal vibration. (The necessary compromise is to half-fill it because, unless you're running a full-race dragster or fuelling it with methanol, you want to keep some of the water jackets free or else you won't have any cooling.) It is, in short, pretty hardcore. 424hp of hardcore, in fact, with that E28 LSD having all sorts of spiky power to cope with.

Pontus has really gone to town on the aesthetics, too, eschewing his old man's penchant for retro flair by ensuring that any potential challenger is in no doubt that they're about to get kicked in the teeth. The 17" Borbet rims give the profile a brilliant Hot Wheels look, all pumped-up proportions and caricaturistic stance, while those Mk1 Golf arches that just about rein them in are an unusual alternative to the more obvious Turbo bolt-ons that most 2002 tuners plump

for. The fibreglass front and rear bumpers are an interesting and polarising choice, too; while most people would either run debumpered, as Mats does, or stick a Turbo air dam on the front, Pontus has gone for a set of square-jawed chins that, working with the chunky sideskirts, do a lot to visually lower the car. It's bound to be a look that puts some people off, but that's just what we love about it. Who wants to follow the herd, eh?

Certainly not the Örnbergs. "We're at a point in time where the older generation are talking about their memories of these cars when they were new, and the younger generation think it's cool that they owned them," says Mats, with the logic of a seasoned campfire storyteller. "My first car was a BMW and I've had one or two 2002s in my time... clearly it's rubbed off from father to son!"

They're having a lot of fun with their creations, too. Mats uses his car in autocross competitions, while Pontus can be found drifting his turbo looper when he's not joining Örnberg Senior for a spot of autocrossing. The respective personalities of their shades of orange have naturally bled into two very different 2002s, but they're both on a level pegging when it comes to desirability: whether you're into high-revving screamers or hard-boosting growlers, there's something lurking for you in the Swedish woods. And if you don't see them coming, you'll certainly hear them ●



DATA FILE

ENGINE & TRANSMISSION: 2.2-litre four-cylinder M10B20, Nera ECU, JE pistons, Pauter rods, S14 crank, 84mm stroke, main bearing support, partially concrete-filled engine block, ported and polished cylinder head, 46mm intake and 39mm exhaust valves, billet rocker arms, electric water pump, home-made exhaust manifold, Borg Warner S200 turbo, 3.5" downpipe, 3" exhaust with one full-flow silencer, separate wastegate and pressure relief valve, multiple butterfly throttles from S14, 680cc

injectors, Bosch motorsport coil, Getrag 260 gearbox from E28 528i, Sachs 618 pressure plate, E28 528i diff with 75% LSD, 4:10 ratio. 424whp, 410lb ft @ 1.8bar

CHASSIS: 7.5x17" (front) and 10x17" (rear) Borbet A wheels with 205/40 (front) and 245/35 (rear) tyres, Sachs front coilovers with 450lb springs, complete (narrowed) E28 535i rear axle with coilovers, Porsche Boxster four-pot front

Brembo callipers with 302x25mm discs

EXTERIOR: Harley Davidson orange, Mk1 Golf steel arch extensions, fibreglass bumpers and sideskirts

INTERIOR: Soundproofing, carpets and rear seats removed, six-point roll-cage, Motor Drive seats, four-point harnesses, rev counter, oil pressure and temp, water temp and boost gauges

A dark blue BMW car is shown from the front right side, parked on a paved road. The road has a white line marking. In the background, there are green trees and a clear blue sky. The overall scene is bright and sunny.

SUPER TOURING

BMW's Tourings are universally loved and when modified they reach new heights of awesome.

Words: Elizabeth de Latour

Photos: Bastein Bochmann and Scott Paterson



“I’ve constantly been doing small stuff and making everything look as good as possible”



What is it about Tourings? Estates, Avants, wagons, whatever you call them, there's something irresistible about them, especially when it comes to modifying. Coupés, saloons, convertibles, they can all look good, but Tourings, almost without exception, always look good. It's funny considering that they're arguably the most sensible and family-orientated. Perhaps going against the grain and slamming them to within an inch of their lives or granting them huge power is what makes them so appealing. It's the act of doing exactly the opposite of what they were intended for that makes so many of you want them and makes them so good at being bad.

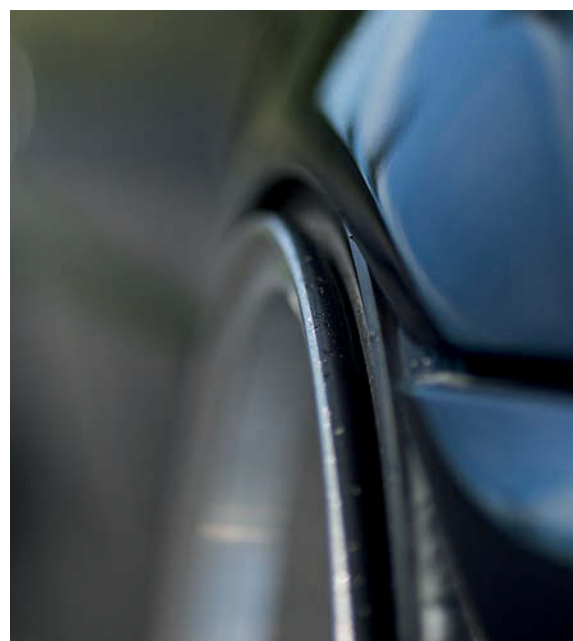
Going even further against the grain is Andreas Wibstad. If there were ever any Touring rules, he has broken them all. At 23, we assume the young Norwegian has no real

need for a Touring, but he's got two of them, which suggests he is a fan of load-luggers, though his motoring past, filled with a brace of Peugeot 205s, tells a different tale. In fact, when it came to this E46, there was no great search, no long-standing belief that the E46 wagon is the Holy Grail of cars, no attempt to recapture childhood memories of family trips in BMW estates: "There was no particular reason why I bought this car," explains Andres, matter-of-factly. "I bought it simply because I needed a bigger daily. I found it randomly online, it was in good condition and bone stock. I only planned on doing a few small things to the car when I bought it two years ago, and just tinted the windows and replaced the kidney grilles, basically small stuff."

Six months of happy, very mildly modified motoring followed but then fate, perhaps, stepped in: "I had a big accident where I got understeer and went straight into a ditch. I



When it comes to stance and fitment, this Touring delivers big time. Cosmis Racing 18s might not be forged, three-piece and worth more than the car, but they look awesome and are something a bit different



had a tree go through my windscreen. I was so angry and upset that about the crash, and everyone said the car was doomed, it would never see the road again. But after a lot of work I managed to buy the wreck back from the insurance company. And after some long months of hard work and a lot of money the car finally hit the road again, lower and better looking than ever.

"I used the car through 2013 and when the winter came I parked it up so no accidents would happen again. While the car was being stored I started doing research on air-ride and new wheels. In the beginning of 2014, a package arrived with some air-ride goodies and a couple of months later my wheels arrived and I started redoing my arches to make room for my new setup. The new paint went on and the car was ready for summer. Since then I've constantly been doing small stuff and making everything look as good as possible."

So, we've got air-ride but it's not a simple, off-the-shelf setup, the E46 Touring being rather more demanding and requiring a custom-made bag over coil system, made with parts from airridesystem.pl, a small company in Poland. "I wanted air-ride simply because I wanted the car to be really low but still be drivable every day. After all, this is my daily," he reminds us with a grin. Considering the size of the boot, Andreas has opted for a surprisingly small build, but it's certainly striking, with a single air tank on show and painted in a vibrant shade of Jägermeister orange, complete with logo, and a matching orange air line and air gun and orange wheel brace for good measure. It looks great and still leaves a vast amount of boot space free that can actually be used, meaning it remains a practical daily proposition for Andreas.

With serious lows comes the need for a serious set of wheels and Andreas didn't

Big boot, small build, very orange. Hidden air-ride gubbins mean the big boot remains useable, while the custom finish means what you can see is eye-catching



DATA FILE

ENGINE & TRANSMISSION: 2.0-litre four-cylinder M57D20, six-speed manual

CHASSIS: 10x18" (front and rear) Cosmis Racing XT-005R wheels with 225/35 (front and rear) tyres, custom bag-over-coil setup with manually controlled valves, EBC drilled discs (front)

EXTERIOR: Fully resprayed in original Orient blue metallic, M3 front bumper, M3 CSL splitters, GTR carbon fibre bonnet, M Tech rear bumper, M Tech side skirts, painted mouldings, rolled, pulled and cut arches all-round, blacked out headlights with retrofitted CCFL rings, tinted windows

INTERIOR: Black leather Sport seats, M3 steering wheel, Harman Kardon audio, custom boot build with custom Jägermeister painted tank

THANKS: Huge thanks to friends and family for supporting me through everything

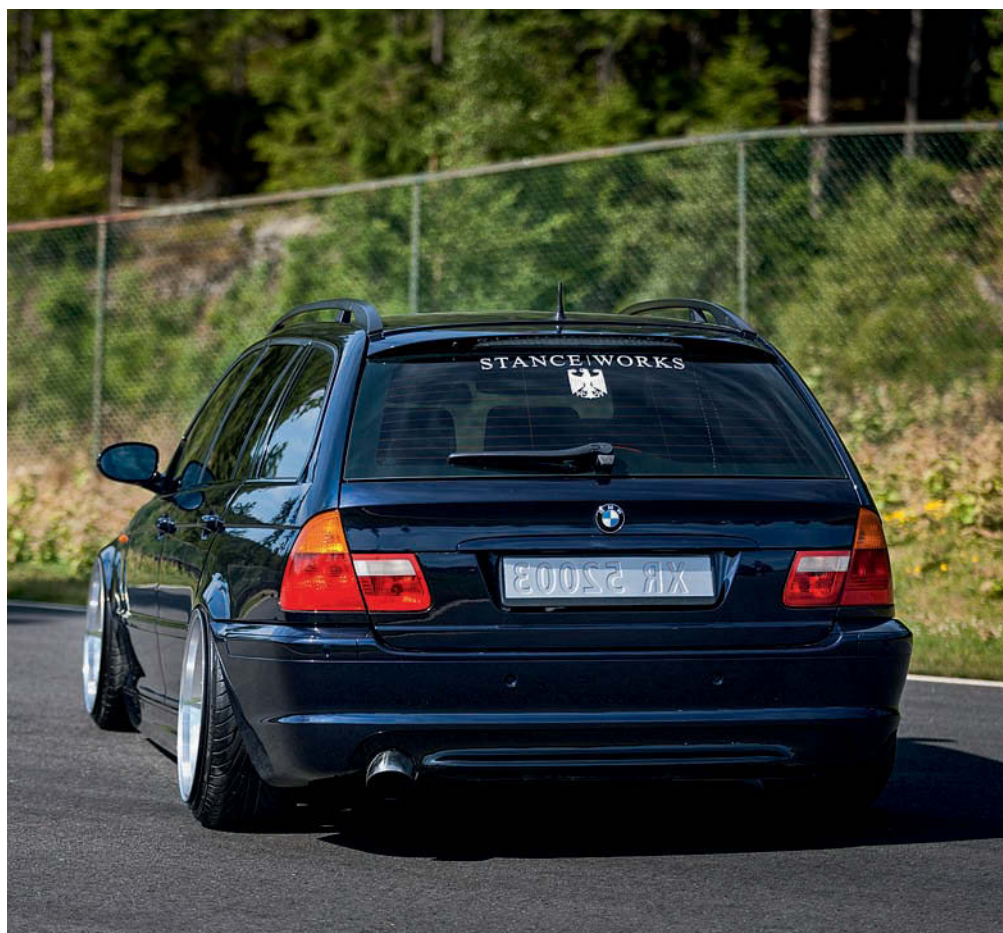


compromise when it came to getting the perfect set for his E46. "I spent a long time searching before deciding," he says, "and I wanted to go with a wheel style not often seen on BMWs." The end result is mission accomplished, with the wheels in question being a set of Cosmis Racing XT-005Rs – definitely not a brand that many people talk about in BMW circles and not a wheel you see often on BMWs either.

The wheel design itself is pretty simple; five spokes with a dish but the execution is what matters and the combination of gunmetal centres with deep machined lips on the 10x18s is striking to say the least, and the wheels look extremely impressive. The fierce-looking spiked wheel bolts won't be to all tastes, but they certainly add an extra visual element to proceedings, as does the flash of colour from the callipers. Hats off to Andreas for making these wheels fit in the first place – the E46 likes a high offset but the 10x18 XTs only come in an ET20, which is pretty aggressive for the E46 but doable with some tyre stretch and a bit of arch work (or quite a lot in this case), as illustrated perfectly here. As far as fitment goes, Andreas has well and truly nailed it.

To go with the aggressive wheels and aggressive stance, the exterior has been given a more aggressive look through a combination of subtle and not-so subtle additions. The BMW parts catalogue has been plundered, with an M Tech rear bumper and side skirts on board, along with an M3 front bumper for a more full-on front end further enhanced and visually lowered with a set of carbon CSL corner splitters, but the real heavy-hitter here is the vented carbon bonnet. It probably won't be to all tastes, but here it works well considering how thuggish the rest of the car is, and the finishing touches are a pair of blacked-out headlights with CCFL angel eyes and tinted windows. It all makes for a rather angry-looking car that is definitely not something you'd want to bump into in a dark alley.

From practical, mildly modified daily, to post-crash wreck, to stunning slammed wagon, this E46 has run the gauntlet of emotions and experiences but the end result is most definitely worth all the work that Andreas has put it in. It flies the flag for the modified Touring brigade and serves as both inspiration and aspiration for those that wish to join its ranks ●





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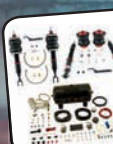
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Trust us, there's an E90 on
this page somewhere. And
once you've spotted it,
you'll be glad you did...

PLEASE FIND IT

Words: Daniel Bevis

Photos: Kevin Raekelboom



“Oh I never think, I just try new things. I do what I feel like, and I hope everybody likes it. But that doesn’t totally matter, I mainly do it for me”



Camouflage is a tricky business. On the face of it, it should be a relatively simple thing; the first image that springs to mind is army fatigues, coloured in randomly-placed patches of green, brown, and fifty shades of beige, to allow a soldier to neatly blend into their bushy surroundings, perhaps with a twig or two taped to the head for good measure. Or perhaps various gradations of sand might be employed for desert combat. And look at the humble chameleon – hiding in plain sight is a simple affair if you’re able to harness any given colour for your own strategic benefit. Nature’s got this thing sussed.

The tricky bit comes when you need to hide something quite large. Arguably the coolest expression of the medium emerged among the marine fleets of World War I, in the form of so-called ‘dazzle camouflage’. This is well worth looking up online if you have a moment, as it looks really cool – jagged black and white stripes, resembling something you might expect to find on a 1920s Soviet movie poster, which supposedly helped to disguise these massive warships among the waves. The complex, interruptive patterns of geometric shapes proved that



V-Maxx front BBK nestles behind a set of 18" BBS Super RS wheels while Bride seats spice up the interior



you can hide anything, as long as you take enough care to disguise it (although, to be pedantic, dazzle camo didn't hide the ships at all; it merely made it impossible to gauge how far away they were...).

Nicky Knapen is a man who knows all about making camouflage work in the real world. Of course, 'real' is a relative term, and he exists within a mid-Nineties Nintendo game, as viewed through a black-and-white telly. So in his realm, this E90 3 Series is totally invisible – it's merely the fact that you, dear reader, live in The Matrix that you're able to see it at all.

"I first saw this style of camo on Jon Olsson's Audi RS6, and I just had to have something similar," Nicky grins. For the uninitiated, Olsson's wagon is a 1000hp road-legal scene legend, and thus not a bad benchmark to set for a project, even if purely on aesthetic terms. It's a logical touchpoint for Nicky too, coming as he does from a VAG background; former projects for him include a Mk1 Golf and a Mk4 Golf, and he's among a tide of people flooding from the VW scene to the BMW scene, hanging on to their imagery with both hands and eager for a fresh canvas to paint it all over.

"I always had my eye on a BMW, the rear-

wheel drive was a big draw for me," he confirms, accompanied by the nodding of countless scene veterans. "And I always wanted a special car – something that gets looks wherever it goes. So it took me about a year to get this car looking the way I wanted it to, but I'm proud of the fact that I did it all myself. And no, I stopped counting how much I've spent on it long ago..."

So, that RS6 aside, where did the inspiration come from? "Oh, I never think," Nicky smiles, brilliantly enigmatic in his modesty. "I just try new things. I do what I feel like, and I hope everybody likes it. But that doesn't totally matter, I mainly do it for me." Admirable sentiment indeed – while it's nice to earn the adoration and accolades of your peers, your car is ultimately your car alone, and you might as well do it the way you want it rather than simply trying to appease a bunch of strangers, right? Backslapping and internet fame are merely fringe benefits of a job well done.

Let's get down to brass tacks, then. What we're looking at here is a 320d. So what's a repmobile-spec oil-burner doing in the hallowed pages of a magazine that proudly has the word 'Performance' baked into the title, you may wonder? Fear not, it'll all

make sense. The reason for choosing the model is that Nicky covers around 25,000 miles a year – his work as a Land Rover mechanic takes him all over Belgium and beyond – so he needs something that's comfortable and, importantly, frugal. Hence the heavy oil. However, life really is too short to be lumbering along in the slow lane; no-one ever looks back on their life when they get to old age and thinks 'oh, I wish I'd had less fun driving, I could have saved a bit of money on fuel'. So of course this 320d has been breathed upon a bit – that sturdy motor is now rocking a custom stainless steel exhaust, K&N induction and light remapping tickle to swell peak power to 207hp. Perfectly respectable, that.

However, the key hook of this car is the aesthetics. You'd probably spotted that unless you inhabit the same monochrome retro video game world as Nicky, in which case you'll be looking at a blank page and wondering what the hell we're talking about). What's most noticeable, aside from the vinyl wrap, of course, is the way it sits. "It's running AP suspension, converted to air-ride with AccuAir SwitchSpeed control," he explains. "I did it all myself, as I like getting my hands dirty and I'm keen to learn about



Plenty of carbon to get excited about inside and out



the car by doing things in a practical way, and I really enjoy driving it now! The suspension was pretty much the first job I tackled after buying the car, it was important to get it low.” AccuAir’s clever SwitchSpeed system is a solid choice too; its three settings – Precise, Moderate, Full Speed – are all customisable by the user in terms of burst speed, and the controller gives full manipulation of each individual spring as well as the option of going up and down in pairs. Or ‘all down’, of course, when you need to deck it at the traffic lights to surprise passers-by.

Central to a bagged aesthetic, as logic dictates, is rolling the correct set of rims too. Now, there are many schools of thought when it comes to wheel choice – for some it’s a classic BBS RS or nothing, others need to have the latest forged fare from a newly emerged I-liked-it-before-it-was-cool brand, many prefer a modern/retro motorsport-aping design like, say, an HRE 505 or Rotiform BM1. For Nicky, though, it had to be the trusty RS; in this instance, the

engorged mid-1980s evolution Super RS built in an 18” diameter with boisterous staggered widths. A simple and elegant design that’s aged very well... and certainly looks more appropriate in camouflage terms in the shade of sober grey you see here, rather than their previous incarnation. “The centres used to be bright yellow,” grins Nicky mischievously. He’s had VIP Modular VRC13s and XXR 527s on there too, it’s been a long road to the current setup.

As he continued to wrestle with the relative merits of subtlety and boisterousness, Nicky’s interior found itself morphing into an interesting fusion of OEM+ and JDM. Tasteful details abound inside, such as the M3 steering wheel and smattering of carbon fibre trim. And then... *BAM!* Your expectations are subverted by a set of Bride seats, howling in drift chic and yet comfortable enough to massage the buttocks throughout all of those motorway miles. It really is cohesive; jarring to some, sure, but it works. And this train of thought

thunders on across the car’s exterior too, with those sharp factory lines neatly augmented by the MSport package upgrade. The trim is shadowlined, the front bumper wears aggressive carbon fibre inserts, there’s more of the dark weave in the form of a bootlid lip spoiler – it’s just brawny enough to separate it from the everyday E90s without being too ostentatious.

Oh yes... but there’s that vinyl camo wrap. That’s quite ostentatious, isn’t it?

You see, this is a car of contrasts, of subtlety and boisterousness working in symbiosis, and that’s just the way Nicky wanted it. He’s not done yet, either. “Oh, I’ve got big plans,” he smirks. “Cars can always be made faster, can’t they? And I definitely want to try something from Liberty Walk. And I’d like to fit a roll-cage. And...” And it just keeps going. Some people just can’t sit still, can they? It seems that there are plenty of exciting things to look forward to on the horizon with this daily-driven four-door. But you’ll have to find it first ●

“Cars can always be made faster, can’t they?”



DATA FILE

ENGINE & TRANSMISSION: 2.0-litre four-cylinder N47D20, custom stainless steel exhaust, K&N induction, remapped to 207hp, six-speed manual

CHASSIS: 8.5x18” (front) and 10.5x18” (rear) BBS Super RS wheels, AP coilovers converted to AccuAir air-ride with SwitchSpeed control, V-Maxx 330mm front BBK

EXTERIOR: M Sport package, camouflage vinyl wrap, carbon-fibre M Performance accessories

INTERIOR: Bride seats, carbon fibre trim, M Performance shifter, M3 steering wheel, Mosconi amp with Rockford Fosgate subs



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BIMMERFEST 2015

With a new location, this year's Bimmerfest was bigger and more popular than ever, as our man in the States reports.

Words & photos: Tony Saggiu

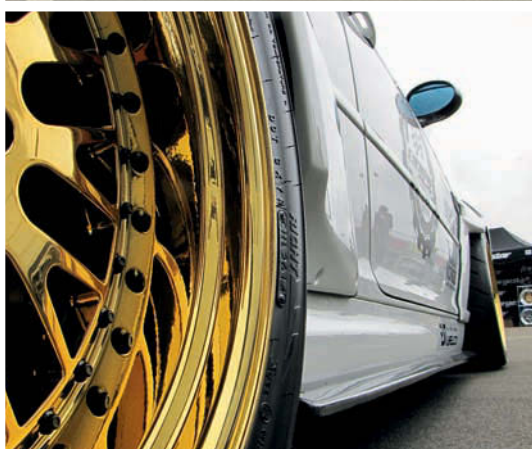
It's no secret that Americans like to do things big; cars, countryside, waistlines, the national debt... it's the American way. Go big or go home, size matters and the Yanks don't mind who knows it. If the point needed proving then this year's US celebration of all things BMW should have closed the case and thrown away the key. Bimmerfest 2015 yet again brought the Bavarian Motor Works massive out in their thousands, event organisers always promise big and deliver even bigger.

If the huge and ever-growing popularity of the annual Beemer gathering needed underlining, then the fact that this year's show had to move to a much larger location should give you an idea as to the size of the celebrations. Previously held within the picturesque and prodigious confines of the California Rose Bowl Stadium (a sizeable piece of real estate that has easily coped with the likes of a FIFA World Cup and Super Bowl crowds), this year's fest outgrew even that massively mammoth location.

In an attempt to host the hoards this year's Bimmerfest was moved to the sprawling Auto Club Speedway complex in Fontana, a couple of hours north east of Los Angeles in San Bernardino County. Home to NASCAR, IndyCar and NHRA events to name only a few, the location is simply huge with acres of race tracks and miles of parking, Bimmerfest may have finally found a location to match its size and stature.

Throwing the event in the closing days of May in Southern California proved to be a little dicey weather-wise, 'May Grey' conditions made things a touch overcast, though Cali's present draught guaranteed rain wouldn't be a factor. If we're honest though the grey skies were a blessing, keeping the Mercury below the normal 45 degree mark in what is considered to be the Californian desert. The Beemers in attendance, however, were still scorchers, with hundreds upon hundreds of the West Coast's finest and fastest turning up for the party. Headlining host for the third year in a row was Norwegian tuning firm European Supercharging Systems (ESS), who was joined by scores of speed and style merchants who literally covered every angle





of the BMW aftermarket. If there's a company that makes your BM look good, handle better and go faster chances are it was represented in crowded aisles of vendors at the event.

Overflowing vendor booths were complemented by sponsor demo cars showcasing their wares... not to mention the ever-popular show models. We'd forgive even diehard BMW disciples if they'd never seen a classic '80s AHG M1 in the flesh, with only a rumoured ten cars ever produced. The AHG version of the supercar is the definition of rare but Anaheim California-based European Auto Source (EAS) had jaws dropping all day at its booth where it showcased one of the fat-fendered bad boys. BMW corporate was also in attendance; the factory boys brought along a mix of retro

and racing hardware as well as the latest offerings on the market. Its striking deep metallic blue factory fresh X6M drew the crowds all day. The twin-turbo, 567hp, V8 eight-speed 4x4 would seem to be just the thing for LA gridlock; 20-way adjustable heated seats, a \$3700 stereo and more gadgets than Curry's in the high street, a bargain at a trifle over a hundred grand.

A tasty Z4 GTLM was one of a quartet of BMW factory race machines rolled out by corporate suites for showgoers to swoon over – built to race in the Tudor United Sports Car Championship the Z4 coupé apparently goes as fast as it looks. We'd be lying if we said the company's 3.5 CSL aluminium wide-body GT racer wasn't our favourite of the bunch though, the mid '70s

'Batmobile' is a true icon.

Our friends at CATuned never disappoint; the Sacramento-based BMW dream factory came out in force with a truck full of parts and show cars that were bona fide scene stealers. The now famous 'Miss Blue' bagged Estoril E30 was sporting a wicked new ITB setup, while their E28 salt 'n' pepper Chevrolet V8-powered beast and black and copper accented M Powered sedan left us speechless. The E30 Touring is causing quite a stir in the States at the minute and the show had a few doing the rounds. The sunshine State has relaxed its draconian import and registration rules a mite allowing the estates to be bought in for the first time. The cars are hot properties and draw a crowd everywhere; it's still amusing to

see Yanks fawning over the humble Tourings... right-hand drive and an E30 with estate status, it's all a bit too much for our colonial cousins.

BMW has certainly jumped in with both feet when it comes to its 'i Series' cars. Electric cars are here to stay and IND Distribution's twin i3 and i8 display had many thinking of dumping their gas burners. Both cars had received a full makeover with subtle styling parts, including some very sexy splits courtesy of HRE.

A lack of variety and diversity is always a danger at single marque events, but the 'Fest underlined not just how varied the West

Coast BMW scene is, but also how inclusive the guys are, with an open invitation to all to turn up and chill out. As usual it wasn't only demo show cars that stole the stage; the huge crowds bought their own offering that were just as hot. We spotted Ricky Deng lowriding his 2001 static slammed Seven Series through the aisles, the silver surfer E38 was showing off a set of Ricky's own VSP Class 2 rollers. At almost a foot wide in the rear, the custom hoops are indeed a class act. Another dapper destroyer was Jeremy Whittle's black and bagged E38, now sporting Classic Line HRE 309s the luxury limo maintains that iron fist in a velvet glove

attitude. A Folger wide-bodied E30, full on stripped out drift cars, an off road E28, a '60s BMW 700 sports coupé... the general parking area was an eclectic delight.

Along with the show action, Bimmerfest for the first time offered a track day, well it would have been rude not to really given the location, another success with more thrills than spills. With the uncertainty of a new location and the size of Auto Club Speedway the chances of things going horribly wrong were very real, however event organiser Jon Shafer ably aided and abetted by Mark Jurista and Tim Jones managed to do it again, a bigger, better Bimmerfest ●



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UNPHASED15

Now in its second year and growing steadily, the relaxed atmosphere and open-to-all-comers approach is making the Unphased show a popular destination for car fans.

Words and photos: Anthony Seed

The Unphased club started its life back in 2008 by a small group of friends who wanted to break away from 'the scene'. The club has grown over the years but its founding principle remains the same: get together with friends and enjoy the time together rather than trying to please everyone else, hence the name, Unphased.

Last year, the club held its first show, held at Worden Park in Leyland, Lancashire. It was free to attend and was a great success. However, this year was all change. The venue moved to Longridge Showground and there was an entry fee; a brave move for the club considering its early stages in becoming a popular annual show.

The day before this year's event, there wasn't a cloud in the sky, perfect weather to prepare the showfield and a promising start to the upcoming show. After a late night, it was an early rise... to the unfortunate sound of rain. Unphased (sorry, we had to) by the

weather, the club's volunteers awoke from their reasonably warm beds, and headed into the awful weather to welcome the committed showgoers.

After an initial worrying spell of silence, the familiar sound of engines began to echo through the usually quiet streets of Longridge, and soon there was a queue to get into the grounds. After a few unforeseen issues, like APR Motorsport UK's truck getting stuck, and show cars struggling to grip on the wet grass, the Unphased15 show began to take shape.

During the day the weather improved greatly, the rain passed and by early afternoon, the sun was gracing everyone with its presence, with just the wind causing a few problems to various stands. This wasn't enough to put the guys and girls off though, Unphased prides itself on having a good time and that's exactly what followed.

Starting with interclub tug of war, with Team Fitted UK winning all of their matches

they took on Team Unphased, only to beat them as well. Following this minor embarrassment, the agenda was moved swiftly on to an eating competition, a popular part of last year's show. With lessons learnt from the previous year, the cold pies were left behind, replaced by Bratwurst from one of the onsite caterers, the time limit scrapped and only one rule: nothing could be left. Last year's winner, Dominic Henry, once again won the competition and was rewarded by a new version of the Unphased Brau and another trophy to add to his collection.

The games took the show through to trophy time, with the winners chosen by the Unphased Team a swell as show sponsors. Overall the show was yet another success for the club with over 800 people attending, meaning that next year should be even bigger and better. Keep an eye on social media, or head over to www.un-phased.co.uk for updates! ●





This year's show attracted a nice, varied selection of BMWs, from E30s to more modern fare like this Z4



Winners:

A.D. Edmundson's choice:

Seat Leon and BMW 1 Series

Performance BMW Best BMW:

Gerald McWhinnie – M3 Evo

Top ten winners:

Gerald McWhinnie – BMW M3 Evo
 Dom Williams – VW Lupo GTI
 George Taylor – VW Derby
 Jake Kitching – VW Golf Mk2
 Iain Dickinson – VW T5
 Dan Hodgson – VW Scirocco
 Dave Dickinson – VW Golf Mk1
 Shaun Lewis – VW T5
 Jack Hogg – Audi A4
 John Dempsey – VW Caddy





THE CAR SHOW COLLECTIVE SHOW OF SHOWS

Take one stately home, fill its grounds full of modified cars,
add sunshine, mix and you've got yourselves the Show of Shows.

Words: Elizabeth de Latour Photos: Dave @ Down-shift.co.uk





On a blazing hot day in mid-May, the grounds of the majestic Penshurst Place stately home in Kent played host to the first ever Show of Shows organised by The Car Show Collective. It promised to be a seriously impressive event, as it was open to all marques. Okay, most of you are probably more interested in BMs than anything else but we wager you can definitely appreciate some American lowriders or the odd classic supercar or two.

The turnout on the day was certainly impressive, with a large main display area, separate show 'n' shine, and a selection of food and trade stands. The show 'n' shine was restricted to some 160 cars, with everyone else being ushered into the larger display and club stand area and, refreshingly, the BMW contingent was out in force with a lovely variety of cars on display.

The E30 Zone lot had come en mass and

they certainly had some eye-catching machinery among their number, including the Biddenden Motor Works wide-arch racer, a gorgeous E30 M3 two-door on dishy OZ Futuras and a wonderfully ratty white Touring poking purple steelies. Elsewhere Dips of Custom Cars had brought along his bagged E46 M3 'Vert, now sporting M3 wheels with copper accents, and he'd summoned his gang of usual suspects which included Jags Bath and his Atlantis E92 M3 soft-top, Dips' old Atlantis E36 Touring – now owned by Vish Gohil, Nadeem Ahmed's Atlantis E46 M3 on Racing Dynamics RD2s, along with Richard Ansari and his E46 M3 with Cinnamon leather and custom OZ Mitos. I came along with my show partners in crime, James Barrett in his Grigio Telesto E46 M3 and Dee Barwick in her Austin yellow 123d Coupé, with Dee and myself tagging onto The Other Guys Facebook group club stand.

The show 'n' shine area was full of the BMW show scene's usual suspects. Tallis Godfrey brought out his air-ride E36 M3 Cab – now on a set of chrome OZ Executives, which definitely turned some heads. Matt Clifford's bagged 840Ci on three-piece Rotiform LHRs was looking as sexy as ever, while E92 pals Shawn Grazette and Josh Hay had their air-ride examples on show. Joey Hazell's E36 'Vert was there, and his stepped-up, polished BBS RSs looked awesome in the sunlight, while Nev D'mello's very tidy red E30 M3 took home the trophy for 'Best German'. We were also loving Tej Bajwa's Santorini E30 M3 on ACS splits, Thom Williams's E46 on BBS RFs, West Donovan's E30 two-door on SSR Formula Mesh wheels and Laurence Turner's gorgeous 1600-02. While there are a lot of shows on each year, the quantity and quality of cars at Show of Shows demonstrated that there's always room for another well-organised event ●



MFEST IX

NEVADA

BMW fun in the desert sun was the order of the day at the annual MFest gathering in Sin City, USA.

Words: Elizabeth de Latour Photos: Peter Wu

The annual MFest show has become something of an unstoppable juggernaut and this year's event showed just how big it has become, with 700 modified

cars turning up and 1500 total attendees. Founder Chris Naguit commented that he feels the event is getting better and that expansion is continuing – there were two regional gatherings in Atlanta, Georgia and Austin, Texas and there will be one in Northern California, a couple more East Coast gatherings as well as events in Indonesia and the Philippines this year.

Nitto Tire and Center BMW (a SoCal-based dealership) were the title co-sponsors and the long weekend of festivities included a Friday dinner followed by a visit to The Sayers Club

the same night. Saturday was the show itself and included track time, then in the evening the Live nightclub event took place. Sunday was spent at the pool at the Foxtail Pool Club followed by a group drive through the Valley of Fire just outside Las Vegas.

Of course, it's all about the cars and this year's event played host to a spectacular selection of BMWs, both old and new. We fell deeply in love with a stunning wide-body E60 M5 on a set of gorgeous HRE splits and we're big fans of the battleship grey, wide-body E39 M5 on stunning Aristo Forged wheels, built by 2M Autowerks, who'd also brought along its striking E46 and gorgeous, slammed purple Z4. Speaking of Z4s, Sleek Designs was in attendance with its carbon fibre example, one of the most aggressive

Z4s about for sure and a real head-turner.

F80 M3s and F82 M4s are rapidly becoming the darlings of the US BMW tuning scene, with a large number of tasty-looking examples on show, though the E92 M3 still reigns supreme, with countless examples on show. Other cars that caught our eye included a stunning E61 Touring, a seriously low E38 7 Series, an E91 Touring that was accessorising with a roof box and a boot build with a bit of decking going on...

MFest is without a doubt a must-attend show that needs to go in to your diary and even if the main event is a bit too far away for you, the various local events are most definitely worth checking out too. This is one show franchise that is only going to get bigger... ●



A very impressive 700 cars turned up for this year's event



We were loving this E60 on HRE splits







Slek's stunning carbon Z4
Right: Interesting boot build



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FORUM.BMW5.CO.UK

Kent meet

If you like Fives, you'll love the 5 Series forum and its recent Kent meet was a great success.

Words: Elizabeth de Latour Photos: Zamanur Quadir



If you've got a 5 Series then forum.bmw5.co.uk is the place to go for all your 5 Series needs. It's also a great place to meet a nice group of like-minded 5 Series enthusiasts, and like-minded enthusiasts like nothing more than getting together to chat cars. Back in December, forum member Shaz H started a thread wanting to organise a Kent meet in 2015, and it quickly snowballed into a massive Five-fest in April with 131 members putting their names down for the Sunday meet.

On the day, some 70 cars made it down the American Diner near Ashford and somehow Shaz had managed to pick what

would turn out to be a really sunny day. As a member of the 5 Series forum it was nice to go along and meet my fellow forumites as well as being able to chat 5 Series knowing that I wasn't boring the other party to death.

The impressive turn-out on the day covered an equally impressive range of cars, with everything from the E12 to the F10 represented, including a selection of M5s and an E34 Alpina, standard, static and bagged (me). We even had a few non-5 Series interlopers along but, hey, the more the merrier. It was nice to see how varied the 5 Series family is when it comes to owners – while some people are fans of keeping things





standard, there was also a large number of modified examples and within that a large variety of modifications, from serious boot builds to performance upgrades. Turn up to most shows and the number of Fives on display is often in single figures, so it was great to see so many examples together and it was good to see people getting stuck into making their car their own.

All-in-all a top meet from a top forum, and its success means that these are now hopefully going to be a regular thing, so if you're a 5 Series owner, sign up to the 5 Series forum, get involved and keep an eye out for upcoming meets ●





SA BEEMER GP DAY

2015

South Africa loves its BMWs so it's no surprise that the country's biggest event of the year drew a heck of a crowd.

Earlier this year BMW enthusiasts from all over South Africa gathered in Johannesburg to attend the biggest BMW event of the year, namely the SA Beemer GP Day (part two).

BMW has long had a strong presence south of the equator; the first BMW assembled here was in South Africa's Rosslyn plant in 1968. BMW South Africa was the first wholly owned subsidiary of BMW to be established outside Germany. Three legendary and unique BMWs were specially made by BMW Motorsport for the South African market. These have now become extremely desirable and collectable. They are: the 1983 E23 M745i (M88 M1 engine); the 1986 333i (3.2-litre M30 engine with a Getrag dog-leg gearbox) and the 1989-1992 E30 325iS complete with an Alpina derived 2.7-litre engine producing

211hp in Evo 2 disguise).

Various clubs from all over the country were present on the day, with South Africa's largest online community, BMWFanatics.co.za, organising a 90-strong convoy which coasted 30km to the venue. As a result the club won an award for the 'Biggest and Best Convoy' of the day.

BMWFanatics teamed up with local dealership Zambesi Auto M Division – which led the pack and supplied three safety cars for the convoy (a beautiful F12 M6 fitted with an Akrapovic exhaust system, a F10 M5, and an E70 X5M).

Over 500 BMWs, including beauties such as the new F82 M4, the desirable E36 M3, and the iconic 2002, were on show in the 32-degree celsius African sun. Families and enthusiasts alike strolled the rooftop appreciating the finest Bavaria has to offer.

Spectators were treated to an aural symphony, which we've grown to love and, in South Africa, that is more often than not loved in its straight-six configuration.

Some of the show competition winners included: a 1994 E36 M3 Coupé with only 40,000km on the clock, which took the award for 'Best M'; a 1990 E30 B3 Alpina with 273,000km taking the prize for 'Best Rare Car' of the day and a 1971 2002 with 134,000km which took the honour of 'Best Old' for the day.

It was a day that will be remembered for its extremes: the excessive amount of clean BMWs that came out from the woodwork; the extreme heat; and the surplus of smiles all around. It was a great occasion for like-minded individuals to congregate and share their passion for one of the world's most loved marques ●





Words & photos: Divyesh Dajee



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Tech Guide

Gearboxes

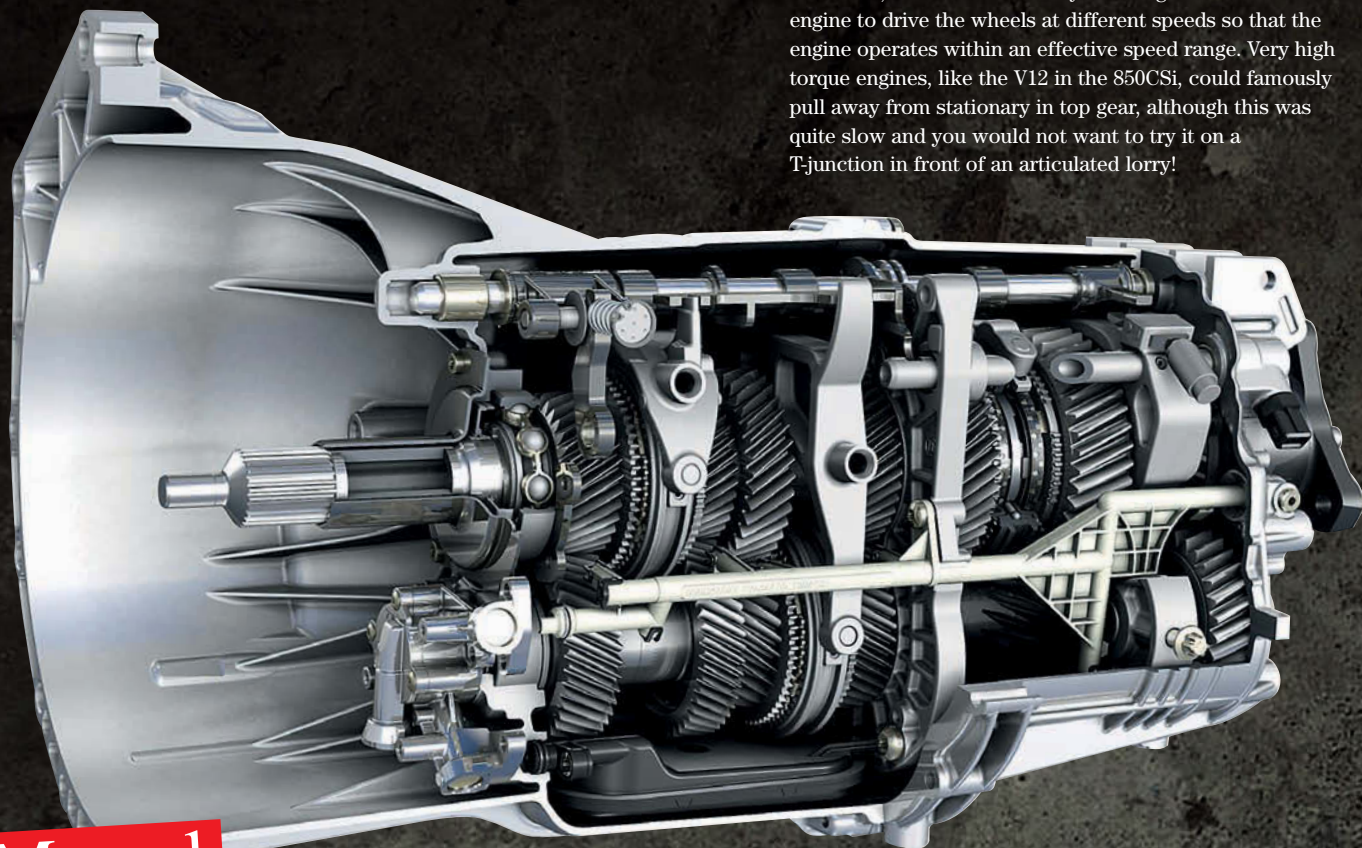
Part 1

Words: Elizabeth de Latour and Gerry Speechley

Photos: BMW, ZF

Gearbox basics

So, why do we even need a gearbox? Let's face it, the engine is spinning and so why can we not just connect it to the rear wheels to produce the required drive through a clutch? Well, unfortunately, unlike a steam engine with unbelievably high torque levels where direct drive is possible, the internal combustion engine, whether it be petrol or diesel, does not produce sufficient torque to allow this, and so we need a system of gears to allow the engine to drive the wheels at different speeds so that the engine operates within an effective speed range. Very high torque engines, like the V12 in the 850CSi, could famously pull away from stationary in top gear, although this was quite slow and you would not want to try it on a T-junction in front of an articulated lorry!



Manual

We would wager that pretty much everyone reading this has owned a car with a manual gearbox, or at least driven one, at some time. It is the most basic and simplest of the gearboxes that we'll look at this month.

As the name implies, a gearbox is, quite literally a box full of gears arranged in a number of different configurations that, when connected by you physically moving the gear lever, offer you the various different gear ratios. BMW currently has up to six forward gears while Porsche offers seven ratios in its manual gearboxes. The gearbox features an input shaft and output shaft, in-line with each other in a rear-wheel drive car, and a countershaft or layshaft with gears that are matched to gears on the output shaft. The ratios are designed to provide maximum torque in the lower gears by reducing the rpm at the gearbox output shaft compared with the engine rpm at any given point, with a 1:1 direct drive gear ratio, usually one down from top, and usually a top gear ratio that essentially overdrives the rear wheels by increasing the

rpm of the output shaft over engine speed. (Fun fact: in the E36 and earlier E46s, the five-speed gearboxes did not use an overdrive top gear as BMW felt that it had done enough work on engine efficiency to improve fuel economy to such a degree that it was decided a direct drive top gear was sufficient).

When you move your gear lever around the gate, you're not actually moving any gears directly, what you're doing is operating a selector fork that connects a collar with dog teeth that engage with matching notches in the gears themselves. The gears themselves are always meshed and, with the engine running, always turning, simply freewheeling on the output shaft. When you go to select a gear, you're moving the selector fork to the corresponding collar and then engaging it with a chosen gear, moving that gear into mesh with its corresponding one; if you mess up a gear change and hear a grinding sound, it's the dog teeth on the collar crunching against the faces of the gears themselves. Often, the dog teeth are undercut so that as power is applied

after the successful engagement of the gear pair, the gears pull together to eliminate the gear selected 'sliding out' of mesh.

For reverse, an idler gear is used to rotate one gear on the output shaft in the opposite direction to the rest of the gears. Generally speaking, when you select reverse you will be physically moving the idler gear in between two other gears to reverse the output of the engine. As you only ever engage reverse when stationary (unless you are some sort of stunt driver), there is no synchromesh on the reverse gear as it's not normally needed, although some manufacturers now install one for smooth operation of reverse. Speaking of synchromesh, this is a system designed for smooth operation that allows the collar and the gear to make contact and for the speed between them to match before the dog teeth engage. The systems used for this vary but all that's required is a way for the gear and collar to make physical contact before the dog teeth, normally achieved using a cone clutch and a blocking (synchro) ring.

Automatic & Steptronic

An automatic gearbox is significantly more complex as it uses just one set of gears to produce the necessary different ratios via a planetary gearset. This is the main part of an automatic gearbox and is made up of three separate components: the sun gear; the planet gears and their carrier; and the ring gear. The sun sits in the centre, with the planets around it in the carrier and the ring gear is on the outside and each of these can be the input, output or can be held stationary, and the different combinations result in different gear ratios. In order to produce more ratios, you need compound planetary gearsets, which use multiple sun gears and planet sets to produce the different ratios. The gears are arranged in such a way that only certain planets will engage with the ring gear and their corresponding sun. A series of clutches and bands are used to hold specific components of the gearset stationary whilst allowing others to rotate in order to create the required ratio. These are in turn controlled by a valve body, known as the valve chest, and the sequence of operation is controlled by the transmission's programming, with the metal bands being physically actuated by pistons that are operated by hydraulic pressure routed into the cylinder through a set of valves. The clutches are also actuated using hydraulic pressure, with fluid entering a piston inside the clutch causing it to engage whilst springs ensure it releases when the pressure drops sufficiently.

In older gearboxes, when it comes to actually changing gear, shift valves are used that operate with pressure from both the throttle and the centrifugal governor, fed by pressure from the output side of the gearbox. When you accelerate hard, the throttle pressure exceeds the pressure generated by the governor, and so the shift valve is prevented from moving and the car won't change gear, allowing you to accelerate hard in-gear without having the 'box change up halfway through the rev range. Under light acceleration there's very little pressure from the throttle allowing the higher pressure from the governor side to operate the shift valve, which is why autos will shuffle up through the gears quite quickly when being driven gently.

If you've got a

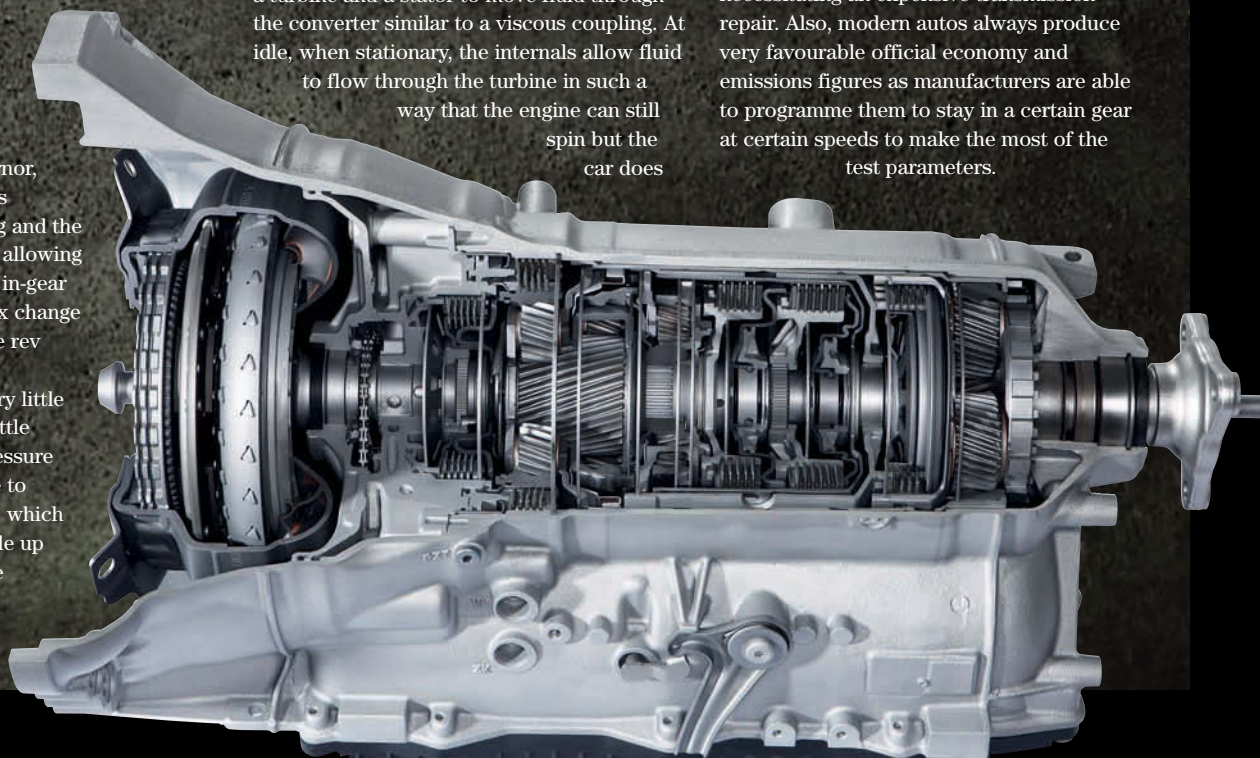
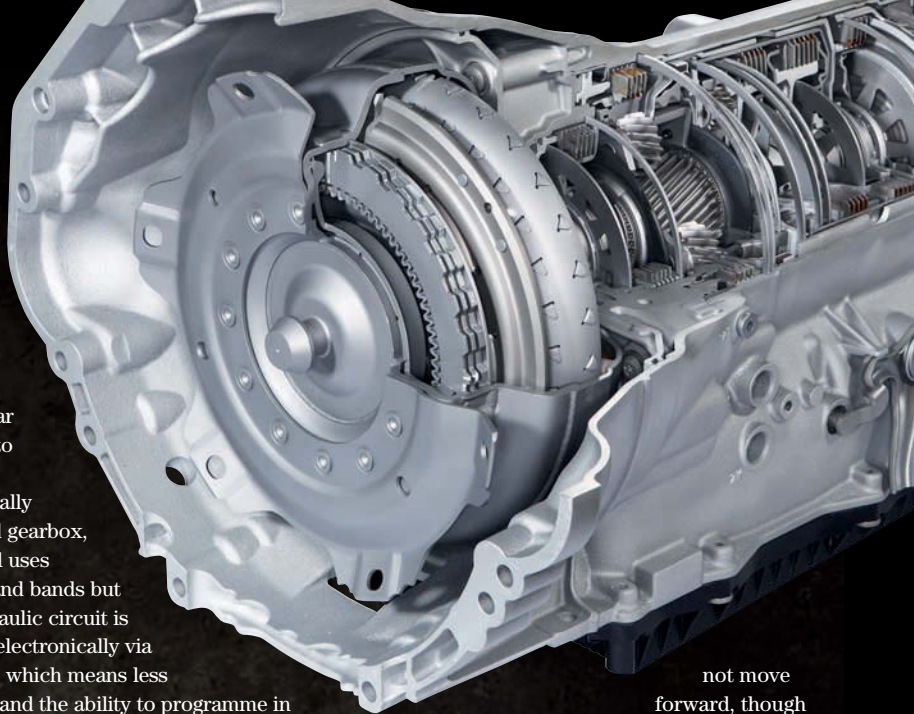
vaguely modern car it's likely to have an electronically controlled gearbox, which still uses clutches and bands but each hydraulic circuit is operated electronically via solenoids, which means less plumbing and the ability to programme in more advanced features and functions, such as downshifting when you're travelling downhill or staying in a single gear when going through a corner rather than upshifting and downshifting unnecessarily. It also gives you Steptronic and its ilk, where manual control is electronically actuated, often by paddle-shift, and sends a signal to the gearbox to engage the next gear, or not if the electronics decide that it's the wrong gear for a given situation and engine or transmission damage could occur should your selection be made. Modern gearboxes are much better at obeying your commands and some will not shift for you in manual mode, allowing you to really use the full rev range without worrying about unwelcome upshifts. Often, a 'sports' mode is available which accesses different programs in the gearbox controlling system that changes the rpm that the transmission shifts at and, in some cases, the speed of the shift.

In terms of actually transmitting engine power to the gearbox without a clutch, a torque converter is attached to the flywheel and creates a fluid coupling to the gearbox. The internals are complex but essentially use a turbine and a stator to move fluid through the converter similar to a viscous coupling. At idle, when stationary, the internals allow fluid to flow through the turbine in such a way that the engine can still spin but the car does

not move forward, though

there is usually enough pressure to see the car creep forward with the brakes off. Some manufacturers have now developed a system where this creep has all but been eliminated but have had to add an electronic parking brake system to prevent the vehicle running back on a hill during a hill start. When you accelerate, the increased speed of the flywheel and torque converter forces fluid through the turbine and causes it to spin, transmitting drive through the gearbox to the wheels. Once you reach a certain speed, when the turbine has reached roughly 90 per cent of the speed of the impeller, a lock-up clutch is applied, creating a more conventional fluid coupling, improving fuel efficiency and throttle response.

A few other things that are interesting and worth mentioning are: when you put your car in park, a metal pin mechanism physically locks the output shaft to the gearbox casing, preventing it from moving. It's not a good idea to just use 'park' to hold a car in place as it places the drivetrain components and gearbox internals under stress. Selecting 'park' whilst moving can also shear this pin necessitating an expensive transmission repair. Also, modern autos always produce very favourable official economy and emissions figures as manufacturers are able to programme them to stay in a certain gear at certain speeds to make the most of the test parameters.



PBMW's FLEET

Thorney Motorsport F82 M4
p96



Steven's E31 850Ci:
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Sam's E46 M3
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Ben's E36 323i:
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Hack Engineering's E30 316i Touring
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Paul's E36 328i:
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THORNEY MOTORSPORT'S F82 M4

The M4, well, it's an M3 really but if BMW want to ruin the whole idea of sports coupés being called M3 then I guess we are stuck with the name, so we might as well work with it. You might say I'm an M3 geek. I've owned 11 over the years: one E30 M3; one E36 M3; four E46 M3s; two CSLs; three E92 M3s; and now this M4, while Thorney Motorsport (TMS) has modified hundreds and built 28 race cars based on the models (most of which are still competing), so it's fair to say we know them well. As a tuning/race preparation company we're looking to add value and improve the car for owners wanting more focus because at the end of the day BMW makes cars for the masses which means it needs to make compromises.

The standard M4 is certainly a compromise. The first drive lets you know that immediately. It's a big car, bigger than an E39 M5, which makes coming from an E92 quite a transition and from an E46 M3 a real eye-opener. It feels big the moment you open the door and slide into the (pretty good) seats and look about. It reminds me of the E60 M5 we had: well-thought-out and plush but ultimately quite un-sporty. Think sports saloon rather than sports car sort of look.

However it works. It's a nice place to be, helped by the expanse of carbon fibre trim our car has.

Next comes the first disappointment: hit the start button and you are met with possibly the most artificial engine and exhaust note I've ever heard. I was expecting it, of course. All the

reports were that it sounds artificial but even knowing that, it was still a disappointment. The engine sounds pretty good (as much as a boosted engine can do) but the exhaust is rattly, tinny and, well, just fake. I'd rather have silence if I'm totally honest.

Other than the lack of noise, the first few drives were as expected: there is lots of power, a lot more torque than an E92 M3 (as you'd expect from FI), and it's quicker as a comparison but not by as much as you'd expect. The E92 will get there at more or less the same pace but feels slower due to the fact it's NA but rev the V8 as you should and there is not a lot in it between it and the M4. In-gear roll ons flatter the M4, of course; turbocharged power delivery will always trounce NA when it comes to in gear work but thrash the V8 model and it's arguably quicker in some areas. However, overall the M4 is faster, there's no denying that. Good news for the M4.

As with any new car the first thing we do after we run it in is put it on our dyno, first on 95 octane fuel (as some owners still use it for some unknown reason) and then on decent higher octane fuel. The results are interesting: 410hp peak on 95 octane and 425hp peak on Shell V Power, so pretty much as BMW state. Not bad. Usually BMW is a bit, er, 'keen' on its claimed figures but the M4 was spot-on (on decent fuel), so that's good. The 95 octane run is to be expected – it beats me as to why anyone with a car like this would run cheap fuel but some do,

CONTACT

Thorney Motorsport
www.thorney.ms
01280 850102





so we test it. However, the upshot is, if you want 15hp more from your M4 just put decent (non supermarket) fuel in it.

Next up was to take a look at the handling – something we specialise in at TMS. The logical thing was to conduct a back-to-back test against the other M3s we own, so I decided to do a test run in an E46 M3, an E92 M3 and then in the M4 – all on the same day, on the same road, and all within a couple of hours of each other. Back to back like this it's clear to see the shared DNA. The E46 was flighty and light, darting from corner to corner, reacting to fingertip control but ultimately it was the slowest of the three. The E92 was bolder and faster but required more delicate inputs into the steering and was less keen to change direction than its older brother, although the noise of the V8 seemed to make it feel faster. The M4 was faster than both of them, not by much over the E92, but still quicker. The main difference was that the process was harder work, turn-in and exiting tighter corners required a lot more control over the throttle and, ultimately, it felt less fun, less in control and was the only car I got out of with a sweat on.

Prior to getting our own car I'd had a lot of calls from customers complaining about the M4's handling. 'I can't get the power down' or 'it's hard work to drive' were the common comments and, if I'm honest, I put that down to crap driving (sorry); an FI car with RWD is

always going to be an exercise in throttle control – drive it like an AWD car (late braking into the turn, apex, then nail it) will just set off the traction control or put you into a hedge, but at the same time the throttle response is not as easy to enjoy as you would with an NA RWD model. With the E46/E92 you steer with the throttle and use the gas pedal to adjust the pitch of the car mid-corner. That's really hard to do in the M4; it either lags or bites depending on where you are in the rev range. Ultimately it's a tiring car to drive fast. I can see why people are selling them quickly.

Our car is DSG; we specced this as our E92 is manual as it's now a track car whereas the M4 we're keeping as a road-orientated car and the DSG is more suited for that. However, overall I'm disappointed. With the CSL I loved the kick in the back with each change and soon learnt to give a little lift off to smooth the gear changes; with the E92 DSG it was too smooth (we owned a Frozen black one with DSG) – it felt like an auto box and ultimately was less fun to drive as a result, so I was expecting the M4 DSG to offer an improvement to both (CSL SMG feel but E92 M3 shift speed). Unfortunately what we get is worse than both of them. There's no doubt of the shift speed; I'm fortunate that another car we have is a McLaren MP12C, a car four times the price of the M4 and the M4 shift is faster (except in track mode) than the MP12 but the M4 is utterly rubbish in terms of feel. BMW had added an

artificial 'kick' to the shift to make it feel like you are changing gear with the result that it just feels like an artificial kick in the kidneys just to piss you off. It really is unpleasant, like an auto box with a malfunctioning kick-down; when pressing on the result is a gear shift that makes any passenger think you've lost all feeling in your feet, nodding away to such an extent you feel you should offer a HANS device to keep them safe.

Of course a lot of this is music to our ears; if the car was perfect we'd be out of a job. But at the same time I can't help but feel disappointed in the M4. It's got a lovely engine with excellent power and offers excellent tuning potential, so that's good. The handling is fixable with some spring and damper changes together with some geometry but ultimately it may be awkward when it comes to some of the bumpy roads we have here in the UK... time will tell. The DSG being so poor is something we will need to work on, though, but it's early days just yet.

There are a few other niggles that owners might recognise: the ability to skip tracks on the stereo is a pain in the arse with a stupid wheel rather than a simple 'forward' button and the fact you can't even lock the car if you leave it in neutral is starting to hack me off, too. At least the CSL just beeped at you disapprovingly. The M4 just says 'no'. But whilst I'm not in love with it yet I am starting to like it more and more and it offers us a great base model to work with. I'll keep you posted.

OUR CARS



STEVEN'S E31 850Ci

One of the issues I knew I had to address when I bought Hiro was the brakes. The original setup is pretty decent for such a heavy car, though unfortunately it is E31 specific (i.e expensive!). Rather than replace them, I decided to rebuild the calipers and fit some braided hoses with new fluid as a cost-effective way of improving the braking ability, made no less important by the fact that the near side front caliper was sticking quite badly.

I ordered replacement seals for all four calipers and set about dismantling them. Three of them proved willing to be repaired, however the fourth simply refused to budge. Since there was no real guarantee of how good it would be after being resealed anyway, I decided to bite the bullet and ordered a replacement caliper from a breaker. While they were in pieces, I decided to give them a lick of paint, too. I painted them bright red to give a nice contrast against the bright white paintwork.

Removing the old brake hoses provided more pain, as while three (yes, three) of the brake pipes have already been replaced by a previous owner, the fourth (NSF again!) was still original, and this obviously sheared off the moment I started tackling

it. Fortunately, the near side front is only about 80cm from the ABS pump, and so I enlisted the help of a mate (cheers, James) who was able to replace the whole line with minimal fuss, and I now have four rust-proof copper brake pipes.

As usual, more problems reared their head along the road, as I realised when removing the near side rear caliper that the bleed nipple had been snapped off at some point. Drilling it out was a task I left to my trusty local mechanics at Toulmin Motors as they have the expertise and steady hand required for such a task (and I'm lazy).

Refitting of the calipers provided further proof of the previous owner's penny-pinching as it transpired that the troublesome rear caliper was in fact an OSR, not NSR, and as such the nipple was at the bottom of the caliper, not the top. As a result, in order to bleed said caliper, I had to remove it, place some wood between the pads and suspend the whole thing upside down from the control arm with some handy cable ties. Not ideal but it worked a treat. I will have to replace this caliper with a correct one in the following weeks as I hate bodge jobs.

The pads and discs looked to have a lot of life

left in them, and so I have refitted them after a quick clean up. I will replace them in the near future but I have diverted funds elsewhere at the moment so they remain. The brake fluid I selected is ATE Superblue, which I use on all my cars. It is a DOT 4 fluid, yet its boiling point exceeds DOT 5.1 specifications. I've used it in my track car for the past three years and I'm very happy with its performance both on road and track, though I admit this is a car that is very unlikely to ever see the action end of a race track.

The braided lines are Wezmoto items, which is a brand I've had very little experience with in the past. However, they were recommended on one of the forums I use and are of excellent quality. Being bright red they look the part, too.

All in all, the brake feel is vastly improved with a good firm pedal which inspires a lot of confidence – something especially important in a two ton car. I'm delighted with the results and I'm hoping it will go some way to removing the tell-tale ABS light from the dashboard.

The next step? I think it's ready to go back on the road, at least for a while, so it's booked in for an MOT next week. Watch this space...



SAM'S E46 M3

I've parted with my rare set of BBS Style 5s. It was sad to see them go as I put a lot of time and effort refurbishing them but on a car that gets driven hard I just couldn't keep them clean and brake dust free; in fact, I don't think I'll ever get polished wheels with 34 spokes again, the cleaning was just never ending! But the biggest reason for getting rid of them was that, like a lot of '90s split-rims, they are not big brake friendly. I would have had to run a large amount of spacing on the front, which wouldn't have gone down well with the tyre-to-arch clearance.

So before I took delivery of my WP pro brake kit I looked at my options. I thought about going back to my OEM 18" square setup, which I'm a massive fan of. They look good but are a bit on the heavy side. They clear my brakes but only just, resulting in me not being able to use my carbon brake ducts that screw over the top of the caliper.

Next I looked at some Apex Racing ARC-8s. I'd wanted a set of these wheels before I'd even purchased an E46 M3 – until my head got turned by the silly split-rims! As I already knew what style and colour I wanted I just needed to settle on a size. At first I thought about a staggered setup of 9.5" front and 10.5" rear but then the different tyre sizes limited my options. So I scrapped that and opted for 9.5" squared. That left just the offsets to decide on. I had ET22 and ET35 to choose from. Ideally I wanted to match the offsets to leave me open to being able to swap the wheels front to rear in an attempt to prolong my tyre life.

With the Apex wheels being very popular in the States there is over a 100-page showroom thread just showing wheel and tyre options people have gone for, so I was able to trawl through these and decide my final option. With the aggressive tyre setup and low ride height it made sense for me to go for ET35. Even though I



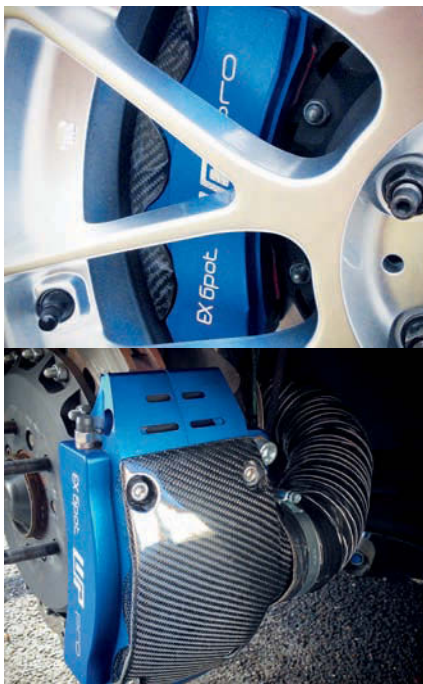
run more than enough front negative camber to pull off ET22, the higher offset would just make life easier. This compromise left me with having to run a rear spacer, which isn't anything to loose sleep over.

Specs decided on, I just needed to find a place to purchase them from. In the end I opted to buy them from Indio-GT as they came in at a good price delivered and the company dealt with all the importing. Unluckily for me my size and colour was on back order but I was kept informed every step of way which was reassuring.

A few weeks passed and then they were delivered to my door. I didn't waste any time in loading up the van. In fact, I didn't even take them out of the box, I just shot straight down to the tyre shop with my 265/35 18 NS2-Rs so I could mount them onto the car that night.

Staggeringly the Apex ARC-8s are 5kg a wheel lighter than M3's 9x18" wheels which doesn't only make them a lot easier to fit, that amount lost in unsprung weight is a huge advantage. Brake clearance was also massive. Apex claim they clear up to 380mm Brembos which I can believe all day long. This clearance finally let me mate up my Hard Motorsport front bumper intakes to the WP carbon brake ducts.

Visually I'm over the moon with how they look, so much so I don't ever want to ever take them off. I could ramble on more but I'll let the pictures do the talking...



OUR CARS



THANKS & CONTACT

Hack Engineering
01444 617365
www.hackengineering.co.uk

RAW Motorsport
01489 799124
www.rawmotorsport.co.uk

CAtuned
001 916 481 2312
www.catuned.com



BEN'S E36 TOURING

The big news this month for the S54 Touring has been the addition of a set of CAtuned coilovers. I've been eying them up for a while now, and as Hack Engineering has made them easily available in the UK, the time had come.

My previous setup was a set of Spax RSX coilovers. They were actually one of the first upgrades I fitted to the car many moons ago, and with their age they'd begun to be noisy and the front adjusters had also seized, losing me my ride height adjustment. They were just tired, and due a replacement. I could think of no better coilover to fit than the CAtuned items. If you take a look at any of CAtuned's incredible builds, it's easy to see the level of perfection that the guys go to. I knew that their name wouldn't be against anything that wasn't a top-notch product, and after a chat with

the man himself, Igor Polishchuk, chief of CAtuned, I knew I was making the right decision.

CAtuned's coilovers are based around a Japanese-made 30-stage adjustable monotube damper, and they feature separately adjustable ride height and spring pre-load, which is a feature I've been looking at for a while. It means that a low ride-height needn't affect the amount of shock travel, and also voids the need for helper springs for secure spring location. A number of other features like a bearing-mounted front upper spring hat also add to how well-thought-out these are. In addition, they come complete with top mounts, all for the price of £850. You can't argue with that.

I opted to have custom heavier spring rates (10k front, 12k rear) as I wanted to go stiffer for

the track work the car does. The old setup was just a bit too soft to make the most of the grip the tyres could give. From what Igor had told me, I would also be likely to find that the damping quality would actually provide me with a step up in comfort, despite the tougher springs.

Once I'd unboxed them, I could see that the quality of the coilovers is just astounding – each and every part is finished to perfection. The adjusters all move smoothly and solidly, the coating feels super-durable, the machining looks superb... I could go on, but you're probably hoping to hear about how they perform.

In short, Igor was absolutely right in his recommendations. I really hadn't clocked onto how noisy and crashy the old setup was – now the E36 just feels so much better. It rides over



CAtuned coilovers are beautifully built and perform exceptionally





HACK ENGINEERING'S E30 316i TOURING

With the E30 home, work could begin this month. Step one was to drop the rear beam so that we could get to work refreshing it all with a number of modifications and improvements.

Disassembly was pretty straightforward – despite 23 years of use the E30 has (so far) been easy to get apart. Only one of the bolts for the rear beam bush lower plates caused us any issue, which was quickly dealt with thanks to a grinder. The brakes were disassembled, handbrake cables removed, prop unbolted, springs and shocks removed and it all dropped with relative ease.

VAC Motorsports has already supplied a set of solid aluminium rear beam bushes and a weld-in camber/caster adjustability kit. I'll be adding to this with some sturdier trailing arm bushes and a more solid diff mounting bush, too, and while everything's apart the beam and arms will get a lick of paint.

As a UK dealer for CATuned, this E30 will also be getting a little of the magic that the California-based guys have developed in recent years. First stop, coilovers. The CATuned range of coilovers use 30-stage monotube dampers, which will offer a perfect level of comfort and handling for a great price. With road and track duties ahead of it, these will work on the E30 perfectly. A full coilover rear setup is already in stock and waiting to go under the Touring. You can read more about these coilovers opposite, as Ben's S54 E36 Touring was recently fitted with a set.

The final addition will be a set of CATuned's Heavy Duty Chromoly Driveshafts. With a shaft made of 4340 Chromoly and heavy-duty CV joints, they'll have no trouble dealing with the torque of the 4.4-litre V8. The only part of the puzzle missing is a decent LSD to sit between them, which will come soon. Tune in next time as the reassembly begins.

the bumps smoothly and silently, while in the corners it truly feels like a different car. It just grips, responds and rides better than ever, all with comfort that, dare I say it, feels better than my memory of stock suspension and certainly better than modern M Sport suspensions.

The final part of the puzzle was to get everything aligned once the coilovers had seen a few miles as a chance for everything to settle. There's no one I'd rather trust with setting up a road or track chassis than the guys down at RAW Motorsport. The E36 was aligned with three degrees of camber all-round and RAW's secret blend of toe settings to ensure that handling on track would be fun without sacrificing tyre life on the road. Perfect – and that's exactly how it's worked out. What a transformation.

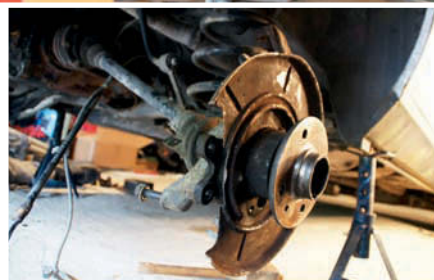


THANKS & CONTACT

Hack Engineering
01444 617365
www.hackengineering.co.uk

VAC Motorsports
001 215 462 4666
www.vacmotorsports.com

CATuned
001 916 481 2312
www.catuned.com



OUR CARS



PAUL'S E36 328i

Take a good look at this face... because it will never look the same again. While there is nothing wrong with the perfectly-formed visage of the E36 328, of course, you do have to agree, when it comes to finely-chiselled good looks, its bigger brother, the M3, got a slightly defter swish of the designer's brush. Put simply, and to my mind at least, the front of the M3 looks better proportioned and aggressive than its sibling – and I wanted a little of that action.

Let's clear up a couple of things first. Did I really want an M3 instead when I bought this car? Of course I did! But this car, with its exemplary service history, excellent condition and high-option package was a mere £1200. These days, with the world and his dog lusting after the flagship E36 like the sure-fire investment it's bound to be, I wasn't even going

to get a basket case shed-of-death for that. So I stuck with what I could afford.

Am I trying to create an M3 replica? Are my next mods to be a set of sills, mirrors, rear lights and a set of Sunflowers? Nope, definitely not. Although I have admired many a 328 or lesser Three so adorned, I'm not a big fan of making my cars look like something they're not. So, although I like the M3 aesthetic very much, for my car it's simply just going to be a front bumper conversion to add a little visual aggression and improved airflow into the mix. The rest of the car can stay as the factory intended – and will be all the better for it, I reckon! I'm proud to be rocking a bargain-basement 328, so no need for a facsimile M-machine.

The price for genuine M3 bumpers is a little steep for me but luckily my usual port-of-call for such matters, M-Style, has a high-quality, low-

cost solution. Its pattern M3 bumper is made of high-quality PU Rim plastic (just like the original) and features all of the same clip-in trims and bracket mounts but at just a shade under £100 all in, it's a damn sight cheaper! M-Style can even pre-paint it for you before they post it, or if you drop by its Romford HQ, it'll even pop it on for you for a nominal fee.

This part really does look and feel like a much dearer OEM item, so it's off to the bodyshop for me to get it lovingly lathered in the original silver. Better still, while the old girl is down there, it gives me a chance to sort a couple of other light scratches, dents and minor corrosion that have been bugging me for a while. It won't just be the nose of this car that will look nicer in a few weeks... the rest of the car is going to look pretty sharp too! Now then, extra splitter or not – what do you reckon?



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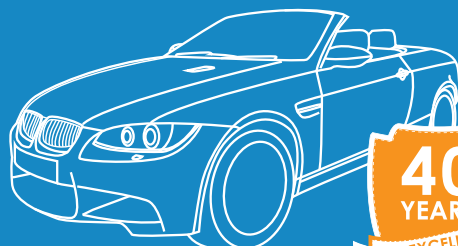
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PAUL TATUM E92 M3

Paul has owned his M3 since February 2012, bought with just 18,000 miles on the clock, and says there are too many mods to mention. We will mention that serious front splitter, boot spoiler and carbon diffuser, though, and he's clearly a man with a bit of a carbon fetish as, under the bonnet, there's not just a carbon intake system but a whole flipping carbon plenum. Engine bays don't get much sexier than that. Inside he's fitted a pair of exceedingly good looking M Performance seats. However, his choice of wheels has raised a few eyebrows, with Paul likening the AC Schnitzer Type V forged wheels to a certain yeast spread. His worst move, he says, was joining the Total M Cars forum as "that place is full of true enthusiasts that will have your wallet emptied on mods quicker than you can blink", but we get the feeling he's pretty happy having an empty wallet and an M3 as good looking as this.



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PAT CARIN E36 M3

LA-based Pat has treated his E36 M3 to a whole host of mods, with some performance software to extract some more performance from it and a DTM-style exhaust to extract a bit more noise. Inside there are UUC pedals and foot rest, Schroth four-point harnesses and a Pioneer head unit. On the outside you'll find a set of OZ Futuras splits, some lowering springs along with a pair of front and rear UUC strut braces while the front bumper has been enhanced with a CA Automotive mesh and a pair of corner splitters. The finishing touch is a genuine and fully functional ATL dry break dual fort fuel filler setup.

GREG LEWIS E46 325i

Okay, so, Greg's colour scheme won't be to everyone's taste but there's a lot of work that has gone into this E46 and it has undergone a serious transformation in two years he's owned it. After writing off an E39 540i the day after buying it (oops), Canadian Greg bought this E46 and got stuck in to the mods. The colour combo is Laguna Seca with white accents, and Greg did all the work himself; the car has been lowered over CSL wheels with a set of FK coilovers and on the styling front there's M Sport bumpers with a Hamann carbon lip up front, a carbon CSL bootlid and uprated lighting. A Magnaflow exhaust, remap, Supersprint exhaust manifolds, Carbonio carbon air intake and remap have resulted in 201whp. Greg's not been shy on the audio front either; there's an Eonon head unit hooked up to Alpine amps for the speakers and sub, a 10" Alpine item, with Polk Audio and Hertz speakers along with headrest monitors.



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